UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
NEWPORT NEWS DIVISION

JOANN WRIGHT HAYSBERT, Plaintiff, v. **BLOOMIN' BRANDS, INC., et al.** Defendants.	Case No.: 4:20-cv-00121-RBS-DEM Assigned to District Court Judge Rebecca Beach Smith

DECLARATION OF NAZARETH M. HAYSBERT IN SUPPORT OF PLAINTIFF'S RESPONSE TO DEFENDANTS' TRIAL BRIEF [DKT. NO. 294] REGARDING THE ADMISSIBILITY OF DR. AARON FILLER

I, Nazareth M. Haysbert, declare as follows:

1. I am an attorney licensed in the State of California. I am licensed to appear *pro hac vice* in the State of Virginia. I am counsel of record for Plaintiff Joann Wright Haysbert in the above-captioned case. I have personal knowledge of the following facts, and, if called as a witness, I could and would testify thereto.

2. Attached hereto as **Exhibit A** is a true and correct copy of Plaintiff's Rule 26(a)(2) Disclosure of Dr. Aaron Filler ("Disclosure"), which attached his Neuroimaging, Neuroradiographic, Diffusion Tensor Imaging Report (CD of scans previously provided to Defendants), Curriculum Vitae and List of Publications and Testimonies, and Fee Schedule/Statement of Compensation thereto.

3. Attached hereto as **Exhibit B** is a true and correct copy of the relevant portions of the trial testimony, Excerpt of Proceedings (Testimony of Aaron Filler, Ph.D.), Day 3, August 10, 2023.

I declare under penalty of perjury under the laws of the State of Virginia and the United States of America, that the foregoing is true and correct.

Executed on August 13, 2023, at Norfolk, Virginia.

/s/ Nazareth M. Haysbert
Nazareth M. Haysbert, Esq.

EXHIBIT A

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PLAINTIFF'S RULE 26(a)(2) DISCLOSURE OF MEDICAL EXPERT WITNESSES

TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD HEREIN:

PLEASE TAKE NOTICE THAT Plaintiff JoAnn Wright Haysbert ("Plaintiff"), hereby makes the following medical expert witness disclosures pursuant to the Court's Order (Dkt. No. 126) of June 17, 2021, and in accordance with Rules 26(a)(2) and 26(e) of the Federal Rules of Civil Procedure:

RETAINED EXPERTS:

1. Dr. Aaron Filler, M.D., PhD, FRCS: Neurography Institute, 2716 Ocean Park Blvd., Suite 1007B, Santa Monica, California, 90405. Phone (310) 314-6410. Neuroimaging, Neuroradiographic, Diffusion Tensor Imaging Report (CD of scans previously provided to Defendants), Curriculum Vitae and List of Publications and Testimonies, and Fee Schedule/Statement of Compensation, attached as **Exhibit A**.

2. Dr. Huma Haider, M.D.: National Brain Injury Institute, 6065 Hillcroft Street, Suite 202, Houston, TX 77081. Phone (866) 983-3167; info@nationalbii.com. jguerra@nationalbii.com. Neurological Assessment Battery and Diffusion Tensor Imaging Report, Life Care Plan, Curriculum Vitae and Publications, Fee Schedule, and List of Published Testimonies, attached as **Exhibit B**.

3. Enrique Vega, MS, CRC, CDMS: Vocational Economics, Inc., 20700 Ventura Boulevard, Suite 220, Woodland Hills, California 91364. Phone (818) 346-3300; Fax (559) 439-0918. enriquev@vocecon.com, jackiey@vocecon.com; Vocational Economic Assessment Report and Medical Care Cost Summary Report/Economist Valuation for JoAnn Wright Haysbert, Curriculum Vitae, Fee Schedule/Statement of Compensation, and List of Published Testimonies, attached as **Exhibit C**.

TREATING PHYSICIANS / NON-RETAINED EXPERTS:

1. Dr. Lind Chinniry, MD.: Divine Health Care LLC., 2100 Executive Drive, Suite B, Hampton, Virginia, 23666, Phone (757) 826-1600; Dr. Chinnery will be able to testify within the scope of the treatment he rendered to Plaintiff,

based on what he learned during actual treatment of Plaintiff, and he will offer opinions formed during the care and treatment of Plaintiff's injuries.

2. Dr. Huma Haider, M.D.: National Brain Injury Institute, 6065 Hillcroft Street, Suite 202, Houston, TX 77081. Phone (866) 983-3167; info@nationalbii.com. jguerra@nationalbii.com; Dr. Haider will be able to testify within the scope of the treatment she rendered to Plaintiff, based on what she learned during actual treatment of Plaintiff, including that Plaintiff suffered neurocognitive deficits, and she will offer opinions formed during the care and treatment of Plaintiff's injuries.

3. Dr. Amir Vokshoor, M.D., F.A.A.N.S.: The Spine Institute, 2811 Wilshire Blvd., Suite 850, Santa Monica, California 90402; Phone (310) 574-0400; Fax: (310) 574-0485; Dr. Vokshoor will be able to testify within the scope of the treatment he rendered to Plaintiff, based on what he learned during actual treatment of Plaintiff, and he will offer opinions formed during the care and treatment of Plaintiff's injuries.

4. Dr. Wilson P. Daughtery, M.D., Ph.D.: Sentara Neurosurgery Specialists, 301 Riverview Ave., Suite 202, Norfolk, VA 23510; Phone (844) 615-1237; Dr. Daughtery will be able to testify within the scope of the treatment he rendered to Plaintiff, based on what he learned during actual treatment of Plaintiff, and he will offer opinions formed during the care and treatment of Plaintiff's injuries.

5. Dr. Katherine Rachon, O.D.: Virginia Eye Consultants, 2234 Cunningham Drive, Hampton, VA 23666, Phone (757) 742-3902; Dr. Rachon will be able to testify within the scope of the treatment she rendered to Plaintiff, based on

what she learned during actual treatment of Plaintiff, and she will offer opinions formed during the care and treatment of Plaintiff's injuries.

OBJECTION TO DISCLOSURE:

Plaintiff objects to the disclosure of medical expert witnesses at this time and intends to file a Motion for Reconsideration of the Magistrate Judge's ruling on Plaintiff's Motion for an Order Extending Expert Discovery Deadlines. (*See* Dkt. Nos. 92, 93, 126). Should the District Court ultimately grant Plaintiff's pending Motion for Reconsideration, this document shall be immediately withdrawn.

Additionally, the timing to select and retain key medical experts is still premature as not all necessary witnesses have been deposed or medical records obtained. Therefore, not all experts have been identified therein or formally retained by Plaintiff at this time. Accordingly, Plaintiff expressly reserves the right to supplement the disclosure of medical expert witnesses once pending discovery issues and filings have been resolved and she is able to finalize these medical expert witnesses.

RESERVATION OF RIGHT TO SUPPLEMENT:

Should new information become known to Plaintiff after this date which shall necessitate supplementing these disclosures, Plaintiff hereby expressly reserves the right to file and serve said supplement(s) consistent with Rules 26(a)(2)(E) and 26(e) of the Federal Rules of Civil Procedure. The absence of any information herein shall

not prohibit Plaintiff from filing said supplements at a later date and shall not foreclose Plaintiff from offering that information in the form of evidence at trial, so long as Plaintiff properly supplements as allowed under the Federal Rules of Civil Procedure.

DATED: June 23, 2021 **CRANDALL & KATT**

By: /s/ D. Adam McKelvey, Esq.

D. Adam McKelvey, Esq. (75174)
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DATED: June 23, 2021 **HAYSBERT | MOULTRIE, LLP**

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Attorneys for Plaintiff JoAnn Wright Haysbert

EXHIBIT A

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DIFFUSION TENSOR IMAGING

Patient Name: Haysbert, JoAnn
Date of Birth: 09/22/1948
MR#: HJ50647
Date of Injury: 05/23/2018
Date of Study: 09/18/2020
Requesting Physician: Huma Haider, MD
Site Name and Equipment: Medical Imaging of Southern California, Beverly Hills, CA, 3T, Siemens MRI Scanner

INDICATION: This is a 71-year-old woman who on 05/23/2018 was at a restaurant and when she got up from the table, she slipped and fell on what was described as a slippery floor, impacting her head, with some loss of consciousness and the onset of neurologic symptoms, a number of which have persisted.

STUDY: MRI OF THE BRAIN WITH DIFFUSION TENSOR IMAGING

METHODS: These images demonstrate the detailed anatomy of the brain with supplemental analysis through evaluation of fractional anisotropy and diffusion tensor imaging tractography.

The report is provided in
three segments:

1) Tractography from diffusion tensor imaging (DTI)
2) Fractional Anisotropy analysis from diffusion tensor imaging (DTI)
3) General brain imaging with Susceptibility Weighted Imaging (SWI).

Diffusion tensor imaging (DTI) was obtained in a 3-Tesla Siemens imager using thirty directions of diffusion. The fractional anisotropy and tractographic analysis were processed using FDA approved NORDIC Brain Ex clinical workstation software.

DTI TRACTOGRAPHY REPORT AND ANALYSIS:

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TRACTOGRAPHI
C REPORT:

TECHNICAL: These images were obtained with 30 directions of diffusion gradients on a **Siemens 3-Tesla imager**, there are no significant artifacts impairing image interpretation.

The tractographic analysis is carried out by adjusting the fractional anisotropy threshold as well as the degrees of angulation and tractographic segment length as inputs to the FACT tractographic algorithm for tract analysis in order to identify areas of tractographic deficits and continuities.

Loss of tractographic continuity does not demonstrate a complete loss of connections; rather it is the effect of a decrease of coherently directed fractional anisotropy along the course of a tract. Such a drop off halts the progress of the tractographic reconstruction process so that the remainder of the tract does not appear. These have clinical significance because they represent clinically relevant interference with transmission of neurological information from one part of the brain to another. The presence of such drop off point does not represent complete loss or obstruction, but rather detects the presence of a relative drop off that affects the normal function of a major tract.

FINDINGS: The tractographic analysis reveals losses bilaterally in the frontal lobe with expected effects of impairment of multistep planning, map-based planning and emotional control release functions. There are losses additionally appreciated bilaterally in the supra-callosal cingulum which would have the expected effects of increased anxiety and depression. Losses are appreciated in the left parietal lobe in the area of the angular gyrus and in this right-handed individual this would be expected to have the effects of impairment of word finding and some effects on calculation ability. Losses are seen bilaterally in the arcuate fasciculus. The right side arcuate fasciculus losses can affect the prosody or flow of speech and the left arcuate fasciculus losses can affect a variety of more complex speech functions. Note is additionally made of some losses in the mid-portion of the corpus callosum which can suggest some degree of diffuse axonal injury with general cognitive impairment. There are losses appreciated in the pillars of the fornix on the left side and the crus of the fornix on the right side which can have effects on impairing new memory formation. The right parietal lobe is generally normal in appearance. The temporal lobes are generally normal in appearance, right and left. The right and left occipital lobes are

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generally normal in appearance. No abnormalities are appreciated in the area of the middle cerebellar peduncle, right or left side.

Three dimensional 360 degree rotations are provided in the DICOM data set for visualization of these findings.

TRACTOGRAPHY IMPRESSION: Bilateral losses in the frontal lobes affecting particularly the area of the superior, middle and inferior frontal gyri with expected effects on multistep planning, map-based planning and emotional control release functions. There are losses on the left side in the parietal lobe extending into the area of the angular gyrus with expected effects of impairment of word finding and calculation ability. Losses are appreciated bilaterally in the arcuate fasciculus which would be expected to have effects on conversation such as impairment of prosody or flow of speech as to the right side and more complex variety of conversational speech impairments associated with the left side abnormality. There are losses in the area of the mid-portion of the corpus callosum which is indicative of diffuse axonal injury that may affect cognition more generally. There are losses bilaterally in the supra-callosal cingulum with expected effects of increased anxiety and depression. Losses appreciated in the right crus of the fornix and the left pillar of the fornix on detailed formal tractographic evaluation of the fornix and the limbic system reveal abnormalities which will have the expected effects of impairment of new memory formation. Overall, these findings demonstrate multiple abnormalities with expected effects on cognition, emotional behavior and neurologic functions as identified above. The degree of injury appreciated in the images would be expected to result in clinically significant symptoms. The locations and types of injury are consistent with the mechanics of the trauma as described.

FRACTIONAL ANISOTROPY (FA) REPORT AND ANALYSIS:

These images demonstrate the analytical level information concerning brain structure. The fractional anisotropy measurements are objective assessments of brain regions either obtained for standardization measurements or comparing right and left structures. Data is obtained with 30 directions of diffusion in a 3Tesla **Siemens scanner.**

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VOLUMES OF INTEREST (VOI's): In all cases the volumes of interest (VOI's) that were measured are selected areas, entirely in white matter, of the highest intensity for fractional anisotropy as visualized by a fractional anisotropy overlay method. This method results in measurements of highest levels of fractional anisotropy in an anatomically recognizable brain white matter structure in the regions assessed. Data is provided with the size in cubic millimeters of the VOI, as well as the mean, minimum and maximum of FA values in the VOI with standard deviation calculated. Histograms are provided for each VOI that can reveal any unwanted bimodal distribution. Image captures were obtained demonstrating the location and size of each VOI measured as shown in three imaging planes. Further, the histograms provided show the variability of anisotropy among the voxels measured within each VOI. Significant right/left asymmetries in fractional anisotropy are considered clinically relevant on a prima facie basis. For a given level of anisotropy, a smaller size of a VOI – that is otherwise bilaterally symmetric – will reveal a reduced volume of that tract and this size difference also has clinical significance in many situations.

CLINICAL BASIS (Scientific Model): This fractional anisotropy analysis is carried out according to the method and clinical concept of Brander et al: *Diffusion Tensor Imaging of the Brain in a Healthy Adult Population: Normative Values and Measurement Reproducibility at 3 T and 1.5 T*; Acta Radiologica (2010), Volume 7 pages 800-807, in which VOI's are measured for fractional anisotropy using the Splenium of the Corpus Callosum as a baseline measure to be compared with other individuals as well as an internal references to assess relative FA drop off in other brain regions. The data provided in articles such as the Brander study show expected relative fractional anisotropy measures using the Splenium of the Corpus Callosum as the standard, because this will tend to have the highest fractional anisotropy in the brain and can therefore provide a cross reference to other imaging subjects as well as provide a basis for assessing the degree of drop-off present to any given brain region associated in a relative to a comparative, standardized set of findings from large numbers of normal individuals.

There are more than 15,000 high quality peer reviewed publications showing the utility and clinical relevance of DTI and only one or two publications written by professional defense experts that attempt to formally raise concerns about utility (e.g. *Wintermark, et*

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al (2015), Imaging Evidence and Recommendations for Traumatic Brain Injury: Advanced Neuro- and Neurovascular Imaging Techniques AJNR 36:E1-E11) mostly by pointing out that the vast majority of publications use groups of patients (usually required for all published studies) but that legal cases focus on individuals. However, Wintermark provided an unreliable biased assessment because he improperly omitted excellent studies showing high clinical and legal utility of DTI data for individuals such as *Yuh et al (2014): Diffusion Tensor Imaging for Outcome Prediction in Mild Traumatic Brain*

Injury: A TRACK-TBI Study, Journal of Neurotrauma 31:1457-1477; and *Mustafi et al: Acute White-Matter Abnormalities in Sports-Related Concussion: A Diffusion Tensor Imaging Study from the NCAA-DoD CARE Consortium*. Journal of Neurotrauma, ePub 2017.

CLINICAL BASIS (Report Methodology): By viewing an FA overlay on a high resolution, co-registered MP-RAGE three dimensional brain MRI acquisitions, asymmetries and drop-offs can be identified as to identified anatomical brain structures. For these VOI locations, the mean and standard deviation data can be used to assess the statistical significance of any different in overall FA for a VOI compared with either the FA of the Splenium or with the FA of a similar VOI on the opposite side. Only a single combined FA for right and left Fornix is obtained in some cases because of its small size if it is not possible to obtain usable measures for each side.

SCIENTIFIC BASIS: Fractional anisotropy is expressed as fraction between 0 and 1 and reflects the degree to which fibers within a given voxels or group of voxels measured and assessed in the volume of interest, tend to share a coherent single direction and high health with good quality within the measured volume. A loss of fractional anisotropy is correlated with a decrease of function or transmission to a given white matter tract area. When two different tracts pass through each other having different directions, incorrectly low FA levels can be obtained, but this is controlled for here by selecting well recognized white matter brain structures that have a coherent single direction. Additionally, matching the same structure right to left corrects for this

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directional diversity issue. As for comparisons with the Splenium FA values, the data from the Brander et al article provides a useful well documented clinical framework that corrects for the directional diversity issue.

RESULTS (STANDARDIZATION): The splenium of the corpus callosum has a fractional anisotropy of 0.78, which is well within normal range, and this is used as a baseline for comparison with other individuals and for comparison with other structures for this individual's brain.

RESULTS (FINDINGS): The splenium is commented on above. The genu of the corpus callosum is at 0.81, also within the normal range. The right corona radiata, measured at the genu of the internal capsule is at 0.68, within the normal range, and left corona radiata measured at the level of the internal capsule is at 0.76, also within the normal range. The right to left difference is not statistically significant. On the right side at the stem of the white matter for the superior, middle and inferior frontal gyri, the fractional anisotropy is 0.22, which is quite low. The left side measures at 0.32. The right to left difference is not quite statistically significant. The overall level is quite low however and suggestive of problems which will result in impairment of multistep planning, map-based planning and emotional control release functions. The right parietal lobe measures at 0.46, just within the normal range. The left parietal lobe is at 0.34. The right to left difference is statistically significant and is essentially in the area of the angular gyrus, which in this right-handed individual would be expected to have effects of impairment of word finding and calculation ability. The right occipital lobe is at 0.52. The left occipital lobe measures at 0.36, which is low. The right to left difference here is statistically significant. This might be expected to result in some impairment of processing of visual information arising on the right side of the body. The right temporal lobe is at 0.48 and within normal range. The left temporal lobe is at 0.41, just within the normal range for someone of this age, despite the relatively good numbers for the splenium of the corpus callosum. The right uncinate fasciculus measures at 0.54 and the left uncinate fasciculus measures at 0.33. The right to left difference is not statistically significant because of variability of the left side. The right arcuate fasciculus is at 0.28 and the left arcuate fasciculus is at 0.28. These are both low numbers and would be consistent with problems with conversational speech affecting primarily prosody or flow of speech as to the right side and more general conversational speech functions as to the left side in this right-handed individual. The right hippocampal cingulum is at 0.32, and that is moderately low. The left hippocampal cingulum is at 0.29, which is also moderately low. The right to left difference is not statistically significant. Overall, these are moderately low numbers and may reflect problems with attention. The right fimbria of the fornix and stria terminalis is at 0.60, within the normal range. The left fimbria of the fornix and stria terminalis is at 0.49, within the normal range. The anterior fornix in the area of the pillars is at 0.37. The posterior fornix at the level of the crus is at 0.24. Particularly for the posterior

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fornix this is a low number and the anterior to posterior difference is statistically significant and this would be expected to have effects of impairment of new memory formation. The right middle cerebellar peduncle measures at 0.60 and the left middle cerebellar peduncle is at 0.77. This is a low number for the right middle cerebellar peduncle and the right to left difference is statistically significant. Impairment for the right middle cerebellar peduncle would be expected to have the effects of some vertigo, problems with balance, sometimes some auditory processing and smooth pursuit motions problems. The right medial lemniscus is at 0.52. The left medial lemniscus is at 0.42. The right to left difference is not statistically significant. Overall, these are moderately low numbers. The medial lemniscus is a general sensory tract and may reflect impairment in the mid-brain area because of this location of abnormality. These would impact functions such as eye movement, convergence, and the underlying symptoms such as photophobia.

FRACTIONAL ANISOTROPY IMPRESSION: Low numbers for the frontal lobe bilaterally, at the stem of the white matter base for the superior, middle and inferior frontal gyri with expected effects of impairment as to multistep planning, map-based planning and emotional control release functions. Low number for the left parietal lobe in the area of the angular gyrus with expected effects on this right-handed individual for problems with word finding and calculation ability. Losses in the left occipital lobe which impair processing of visual information arising on the right side of the body. Low numbers for the uncinate fasciculus and inferior frontal occipital fasciculus may reflect impairments such as flattening of affect and loss of emotional drive and impairment of some visual recognition phenomena. However, given the variability, it is not clearly statistically significant as to the contralateral side. The arcuate fasciculus bilaterally with low numbers which will affect aspects of conversational speech. Low numbers for the hippocampal cingulum which will have expected effects on attention. Low numbers for the posterior fornix with expected problems with new memory formation. Low number for the right middle cerebellar peduncle with expected effects such as vertigo, balance problems, impairment of smooth pursuit motions and some types of auditory processing. A somewhat low number for the left medial lemniscus which would expect to be associated with some midbrain function impairment such as problems with eye movement, pupillary accommodation, convergence and may be associated with symptoms such as photophobia. Overall, these findings demonstrate multiple appearance with effects on cognition, emotional behavior and neurologic functions. The degree of abnormality appreciated in the images would be consistent with clinically significant symptoms. The locations and types of injury are consistent with the mechanics of the trauma as described.

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FA Measurements and Statistical Calculations:

These images demonstrate data collection and analysis in addition to the measured VOI's for the medial lemniscus and the full data set. A full set of VOI measures appears in the image DICOM data file.

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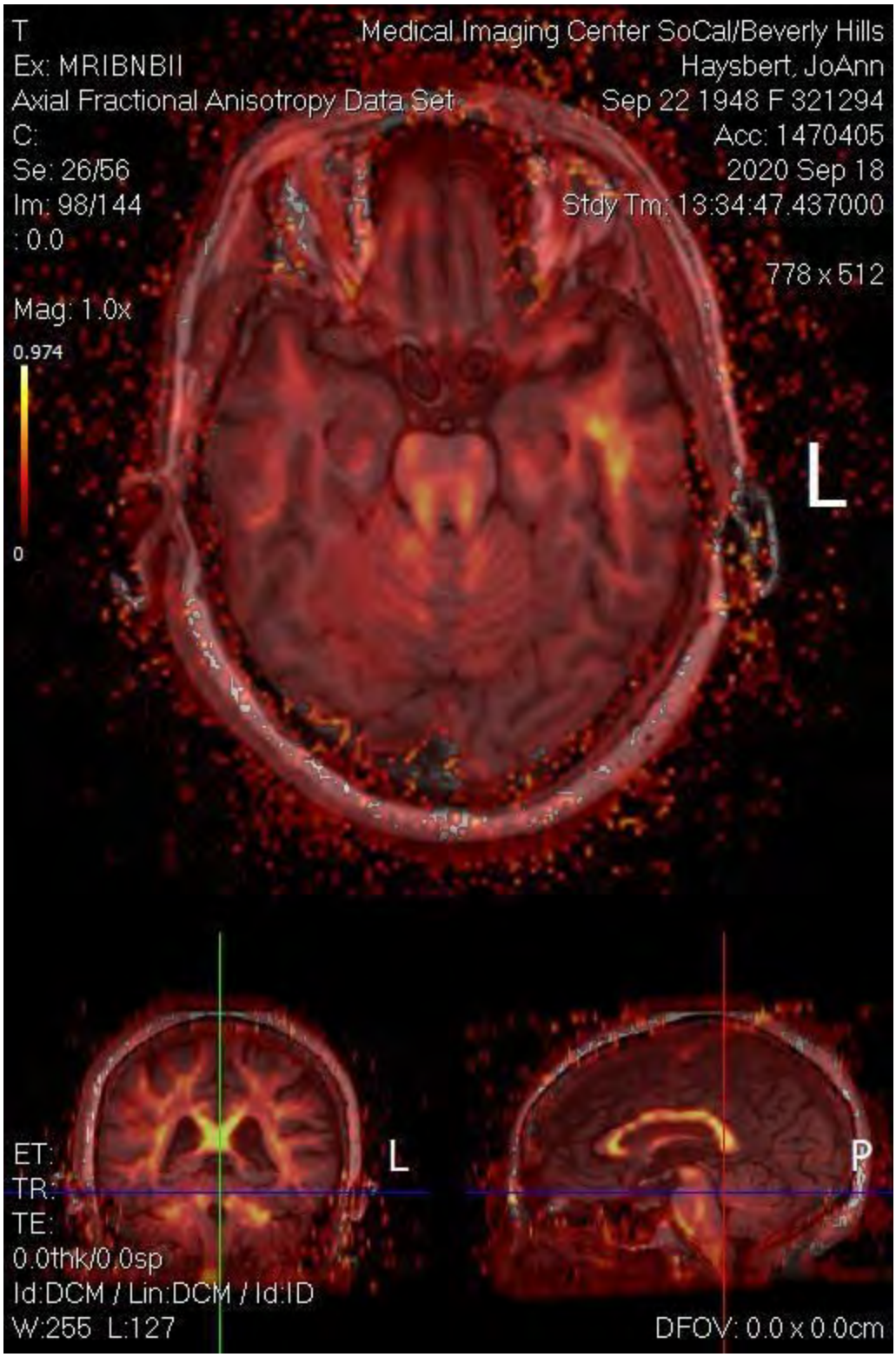

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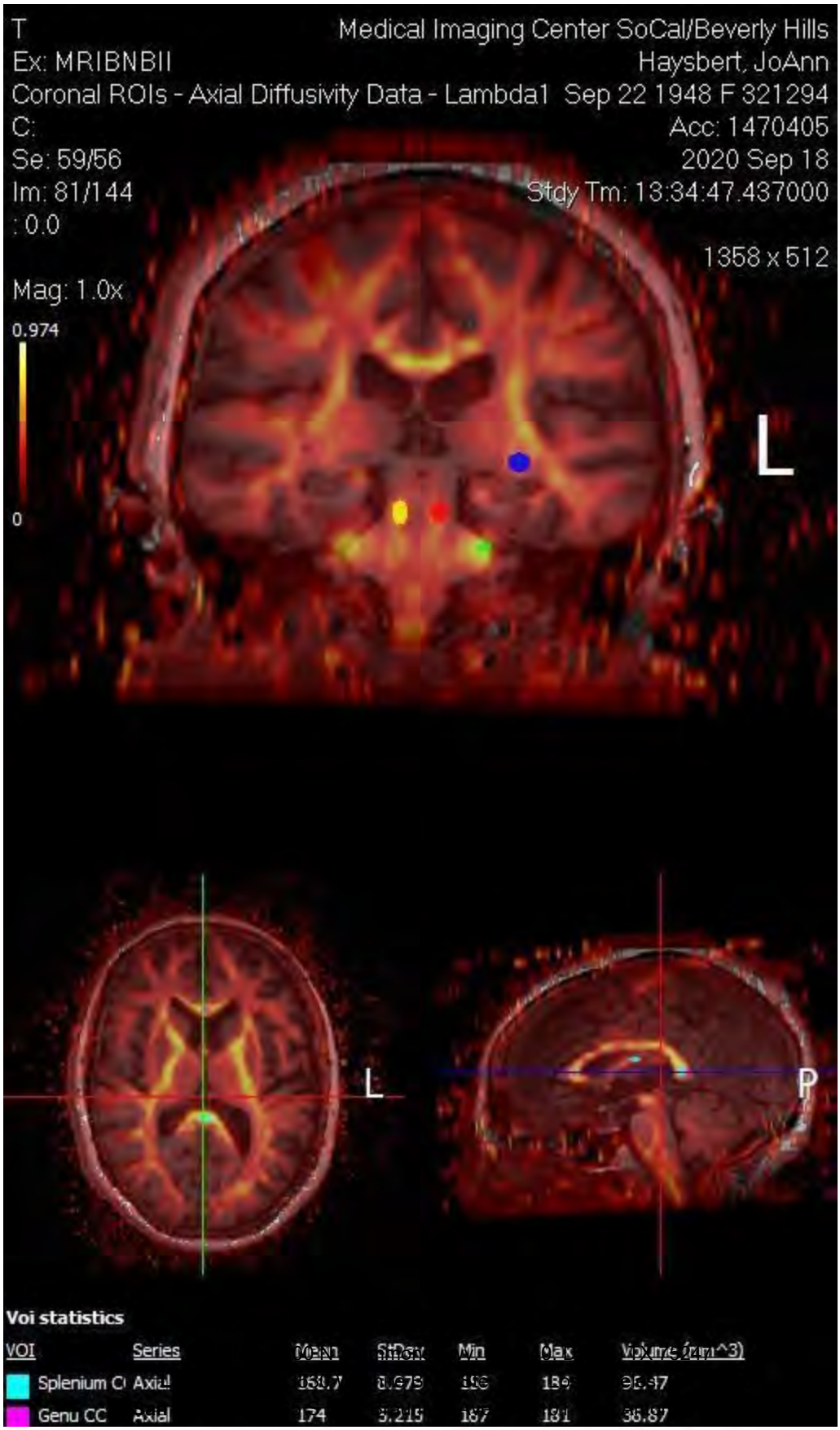

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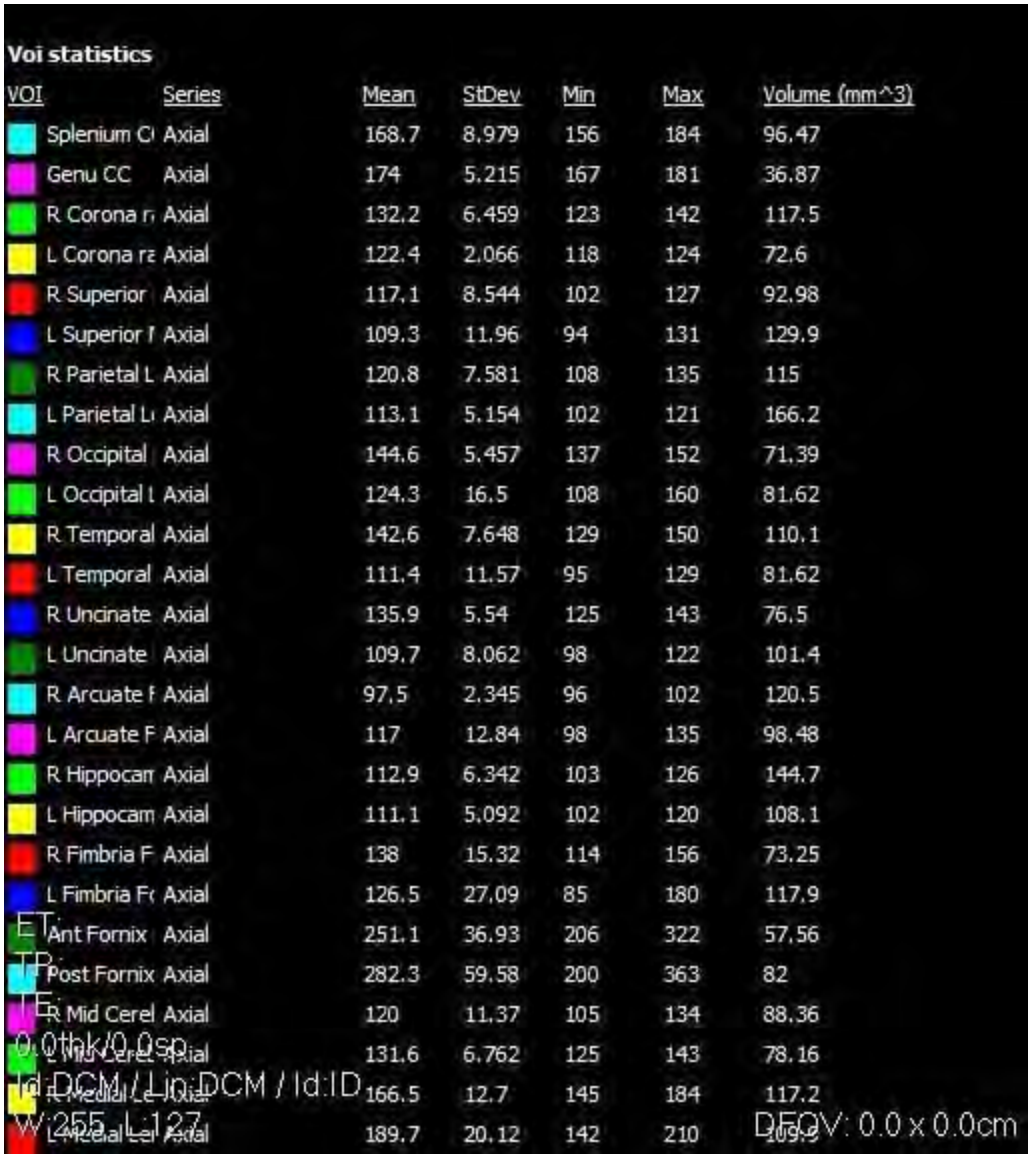

Voi statistics

VOI	Series	Mean	StDev	Min	Max	Volume (mm^3)
Splenium C	Axial	168.7	8.979	156	184	96.47
Genu CC	Axial	174	5.215	167	181	36.87
R Corona r	Axial	132.2	6.459	123	142	117.5
L Corona ra	Axial	122.4	2.066	118	124	72.6
R Superior	Axial	117.1	8.544	102	127	92.98
L Superior f	Axial	109.3	11.96	94	131	129.9
R Parietal L	Axial	120.8	7.581	108	135	115
L Parietal L	Axial	113.1	5.154	102	121	166.2
R Occipital	Axial	144.6	5.457	137	152	71.39
L Occipital l	Axial	124.3	16.5	108	160	81.62
R Temporal	Axial	142.6	7.648	129	150	110.1
L Temporal	Axial	111.4	11.57	95	129	81.62
R Uncinate	Axial	135.9	5.54	125	143	76.5
L Uncinate	Axial	109.7	8.062	98	122	101.4
R Arcuate f	Axial	97.5	2.345	96	102	120.5
L Arcuate F	Axial	117	12.84	98	135	98.48
R Hippocam	Axial	112.9	6.342	103	126	144.7
L Hippocam	Axial	111.1	5.092	102	120	108.1
R Fimbria F	Axial	138	15.32	114	156	73.25
L Fimbria Fc	Axial	126.5	27.09	85	180	117.9
Ant Fornix	Axial	251.1	36.93	206	322	57.56
Post Fornix	Axial	282.3	59.58	200	363	82
R Mid Cerel	Axial	120	11.37	105	134	88.36
L Mid Cerel	Axial	131.6	6.762	125	143	78.16
L Medial Ce	Axial	166.5	12.7	145	184	117.2
L Lateral Cer	Axial	189.7	20.12	142	210	109.2

ET:
TP:
TE:
0.0thk/0.0sp
Id:DCM / Un:DCM / Id:ID
W:255 L:127
DFOV: 0.0 x 0.0cm

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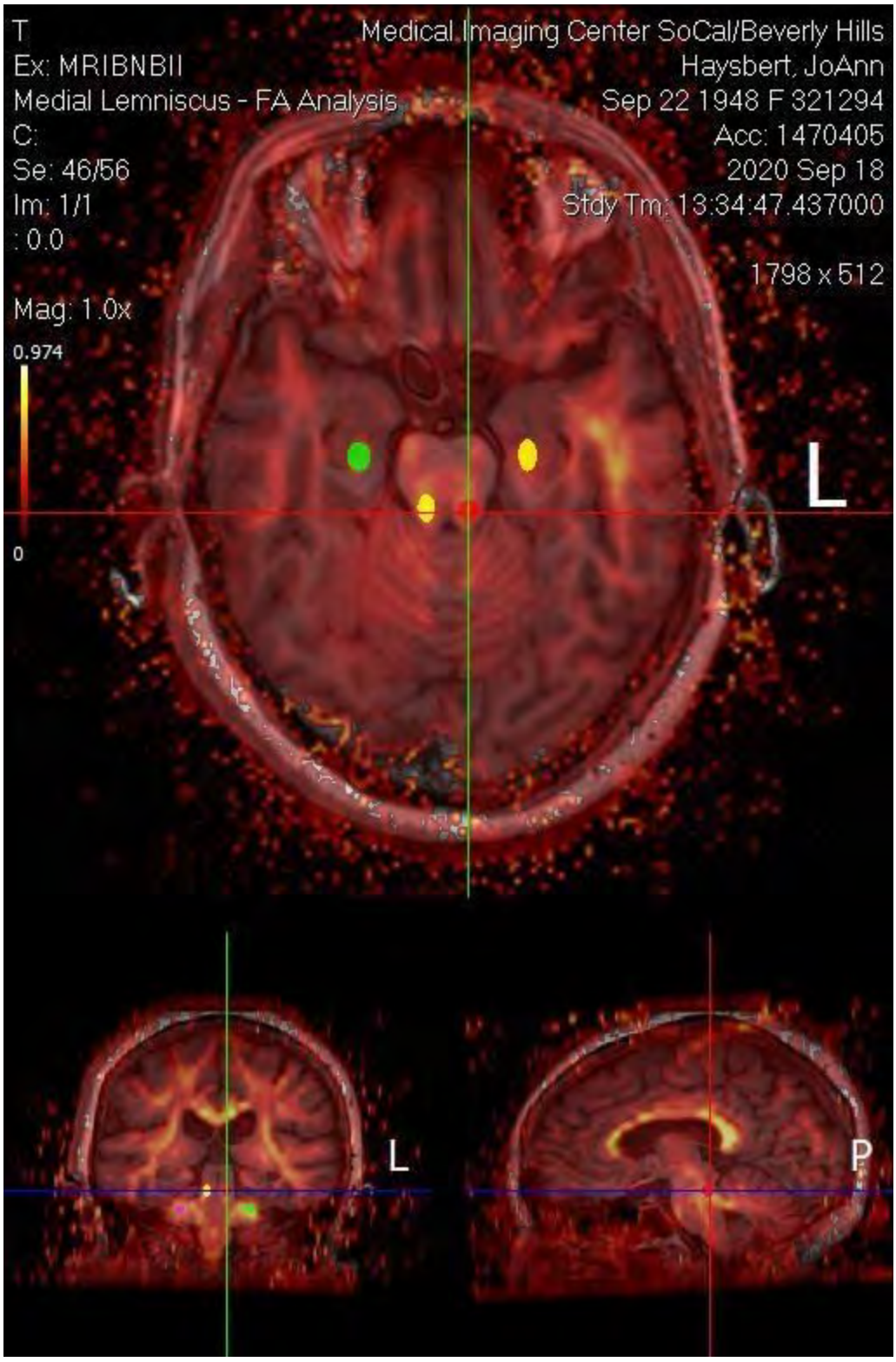

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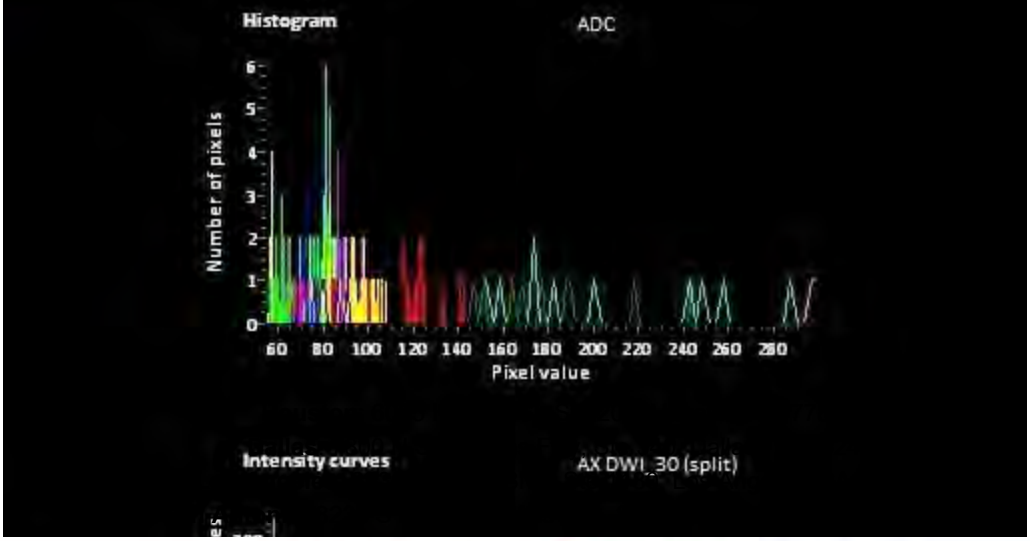
Voi statistics

VOI	Series	Mean	StDev	Min	Max	Volume (mm^3)
Splenium C	FA	0.7844	0.07784	0.664	0.923	96.47
Genu CC	FA	0.8063	0.02488	0.775	0.836	36.87
R Corona r	FA	0.6756	0.08229	0.519	0.796	117.5
L Corona ra	FA	0.7593	0.02573	0.709	0.79	72.6
R Superior	FA	0.2178	0.02771	0.168	0.261	92.98
L Superior F	FA	0.3181	0.07297	0.147	0.397	129.9
R Parietal L	FA	0.4594	0.05188	0.353	0.52	115
L Parietal L	FA	0.3395	0.05547	0.232	0.41	166.2
R Occipital	FA	0.5223	0.04209	0.453	0.575	71.39
L Occipital L	FA	0.3576	0.06931	0.256	0.49	81.62
R Temporal	FA	0.477	0.01883	0.444	0.507	110.1
L Temporal	FA	0.414	0.148	0.213	0.599	81.62
R Uncinate	FA	0.5383	0.04432	0.471	0.618	76.5
L Uncinate	FA	0.3296	0.1252	0.14	0.477	101.4
R Arcuate F	FA	0.284	0.06804	0.185	0.365	120.5
L Arcuate F	FA	0.2761	0.03146	0.207	0.315	98.48
R Hippocam	FA	0.3214	0.0713	0.209	0.424	144.7
L Hippocam	FA	0.2888	0.072	0.148	0.394	108.1
R Fimbria F	FA	0.6039	0.04842	0.527	0.659	73.25
L Fimbria F	FA	0.4939	0.07688	0.35	0.595	117.9
Ant Fornix	FA	0.3707	0.07296	0.276	0.476	57.56
Post Fornix	FA	0.2384	0.04371	0.177	0.294	82
R Mid Cerel	FA	0.6042	0.05796	0.524	0.67	88.36
L Mid Cerel	FA	0.7738	0.03675	0.717	0.819	78.16
R Medial Le	FA	0.5238	0.07205	0.368	0.61	117.2
L Medial Le	FA	0.4193	0.105	0.195	0.537	109.9



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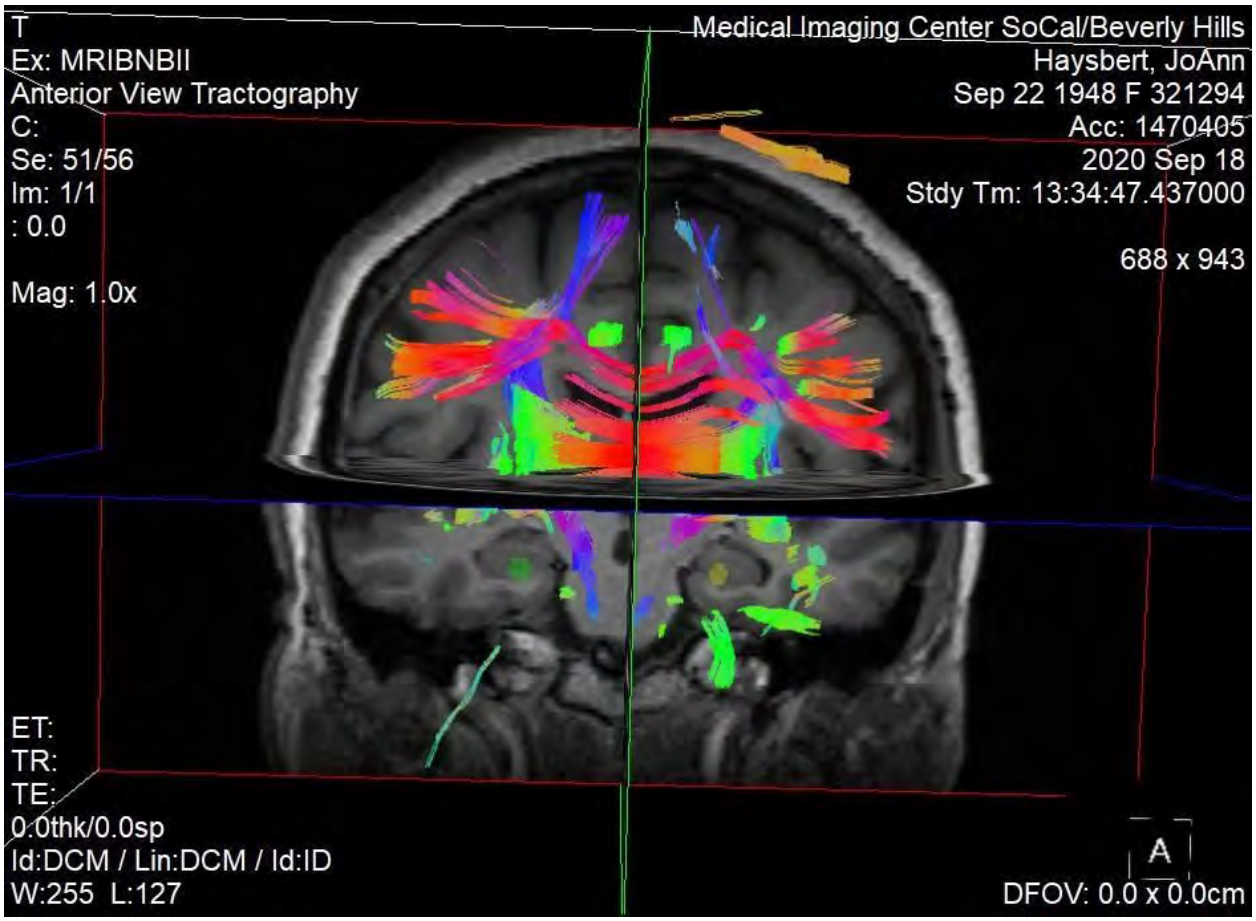

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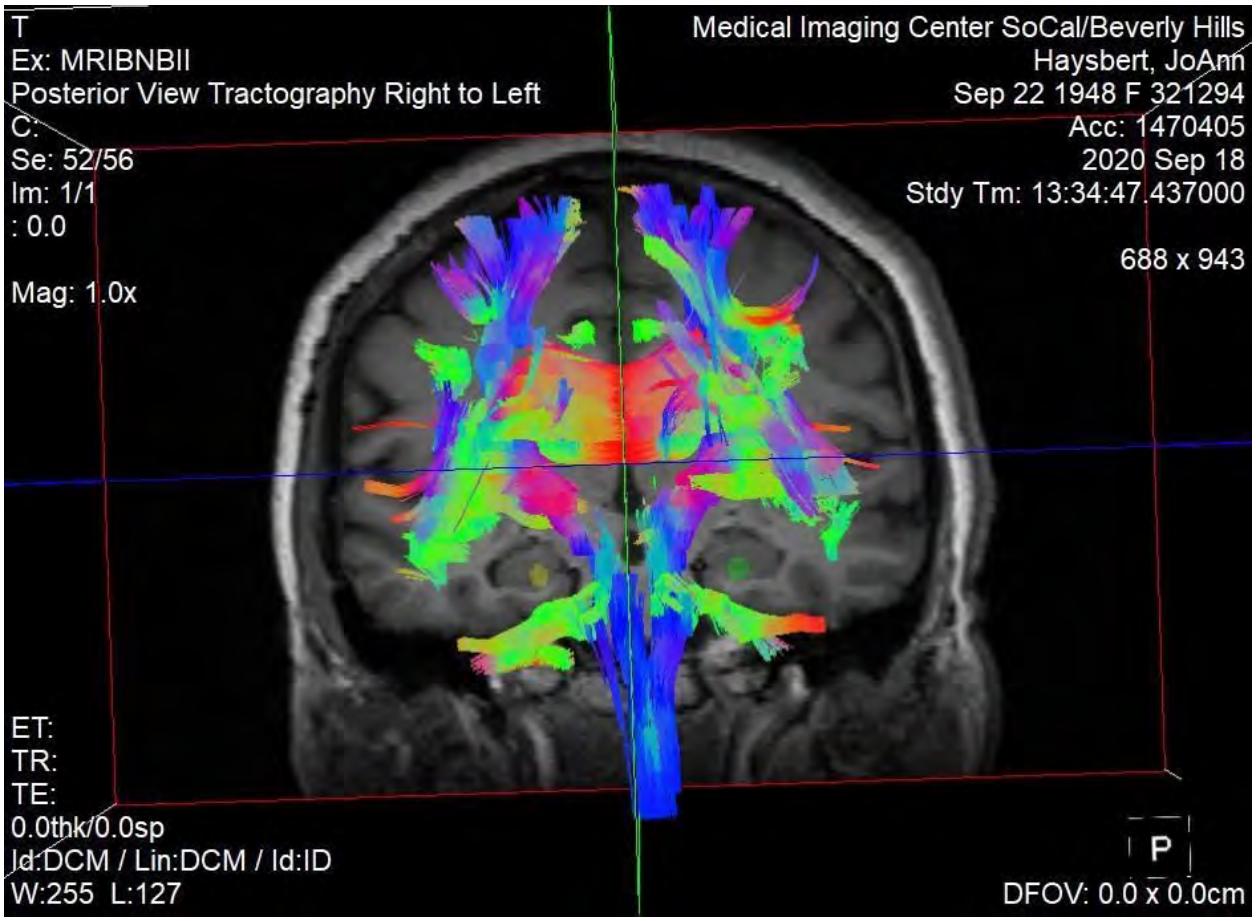

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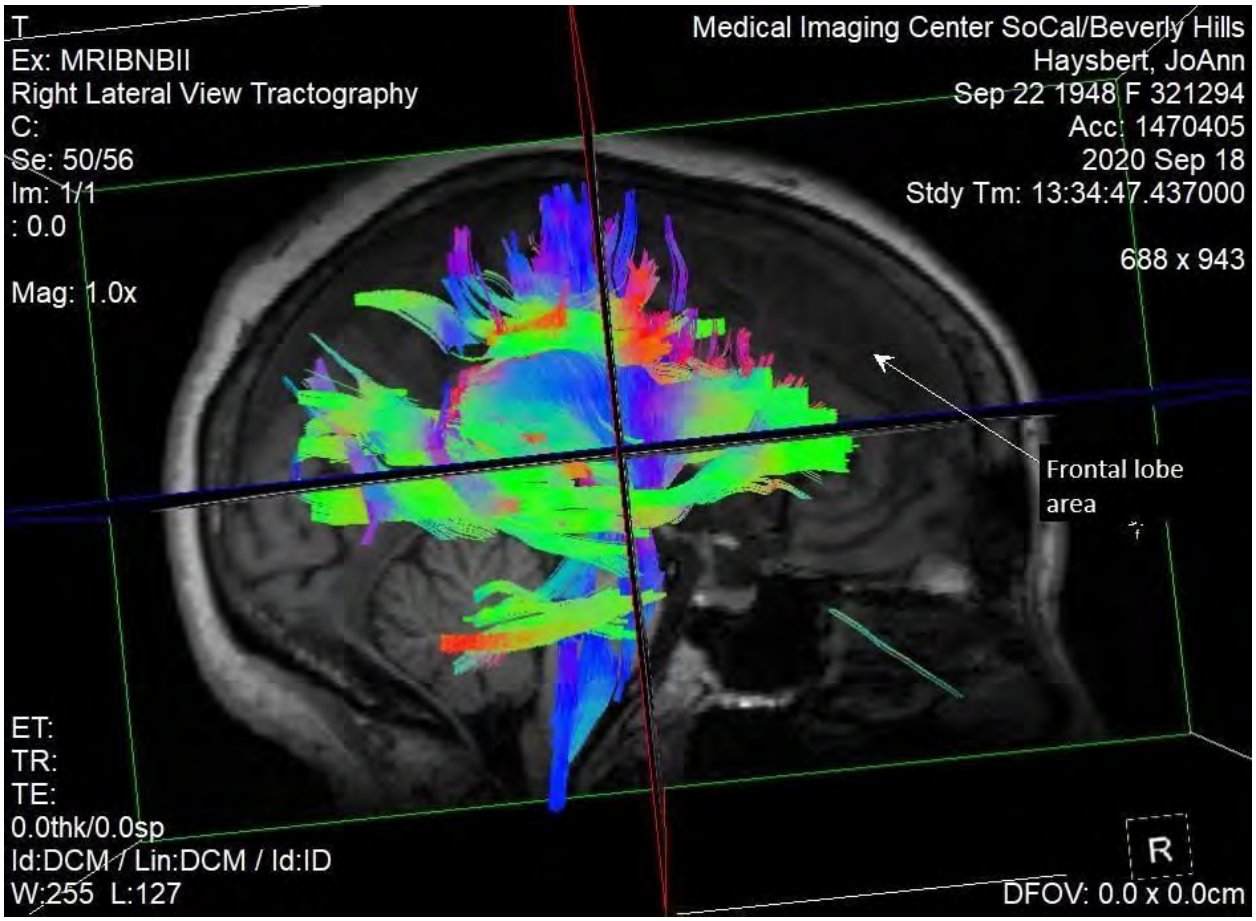

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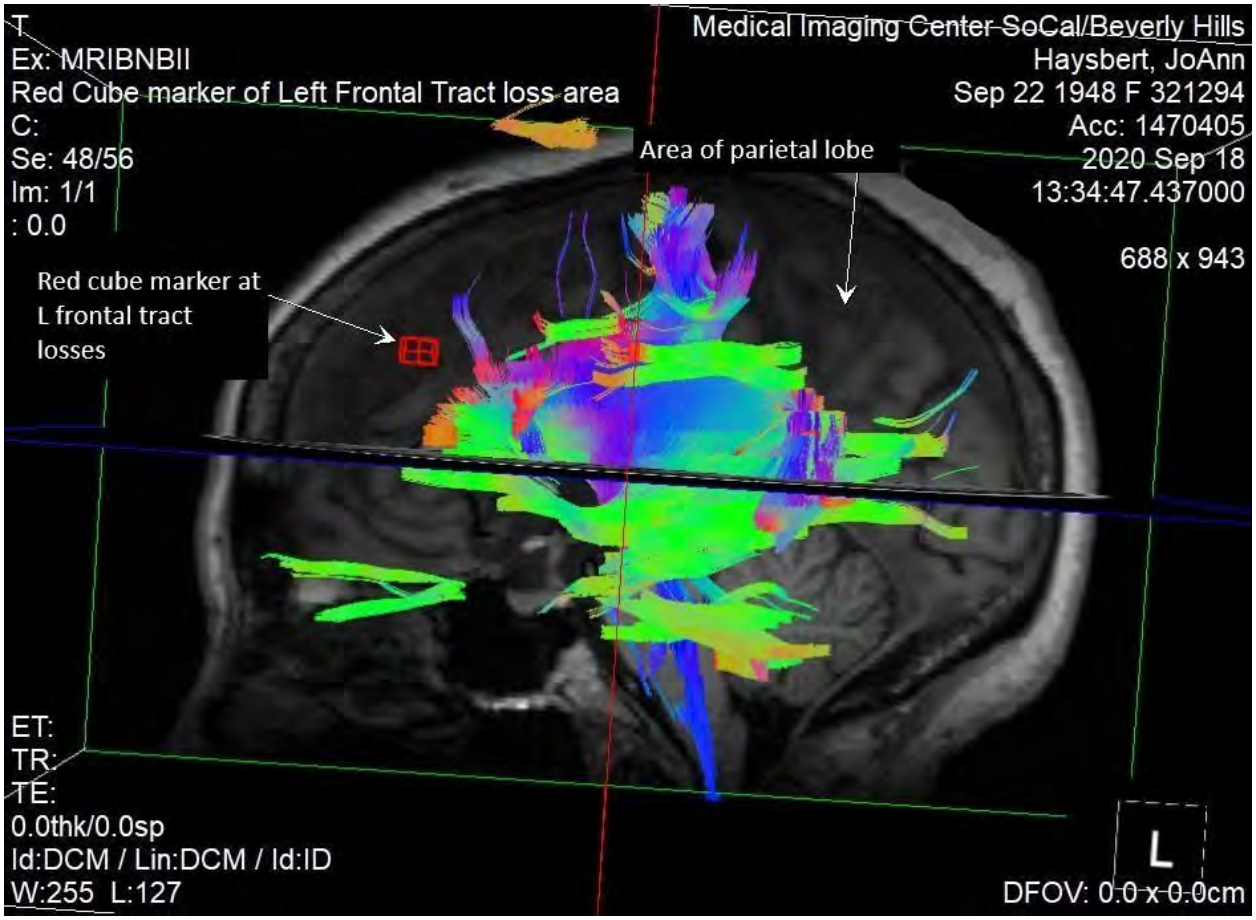

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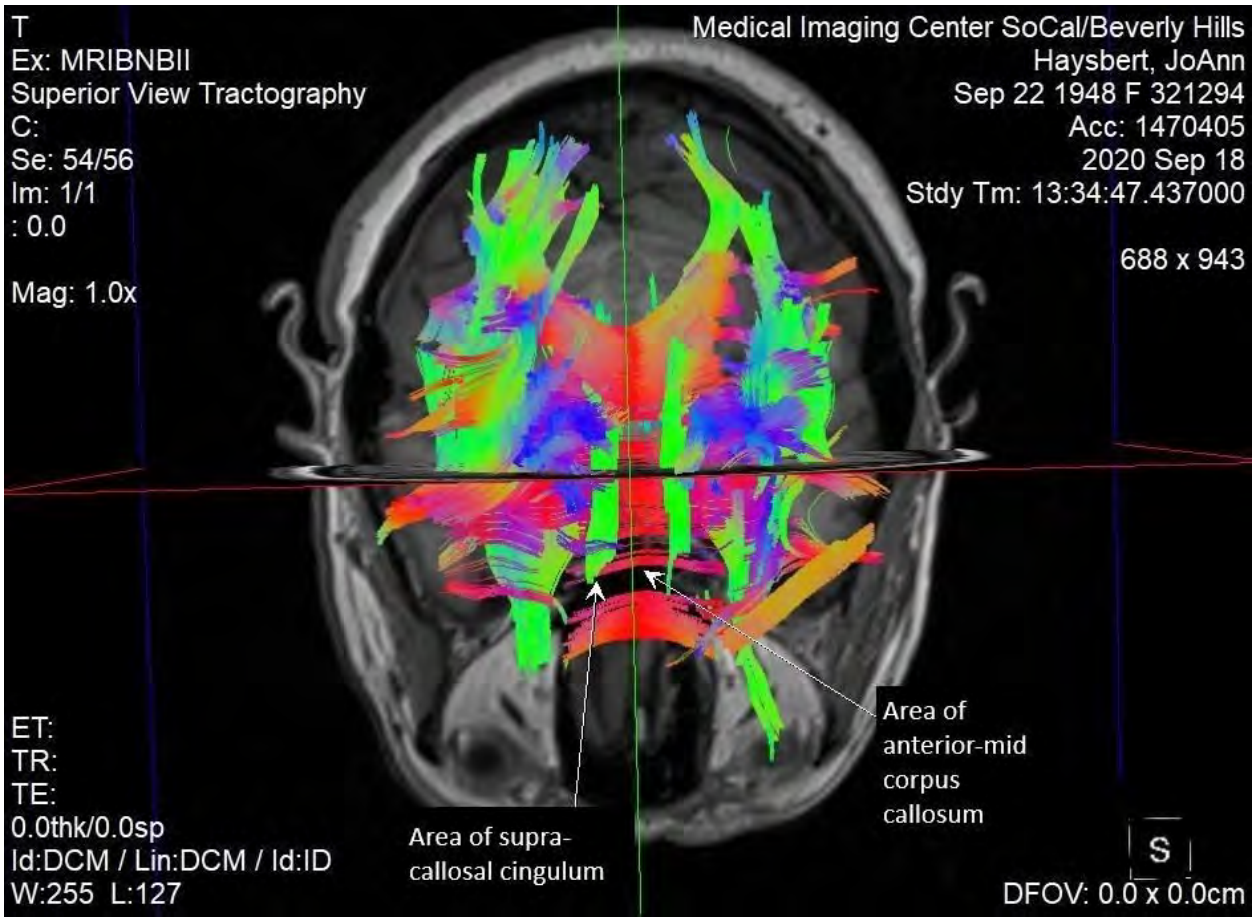

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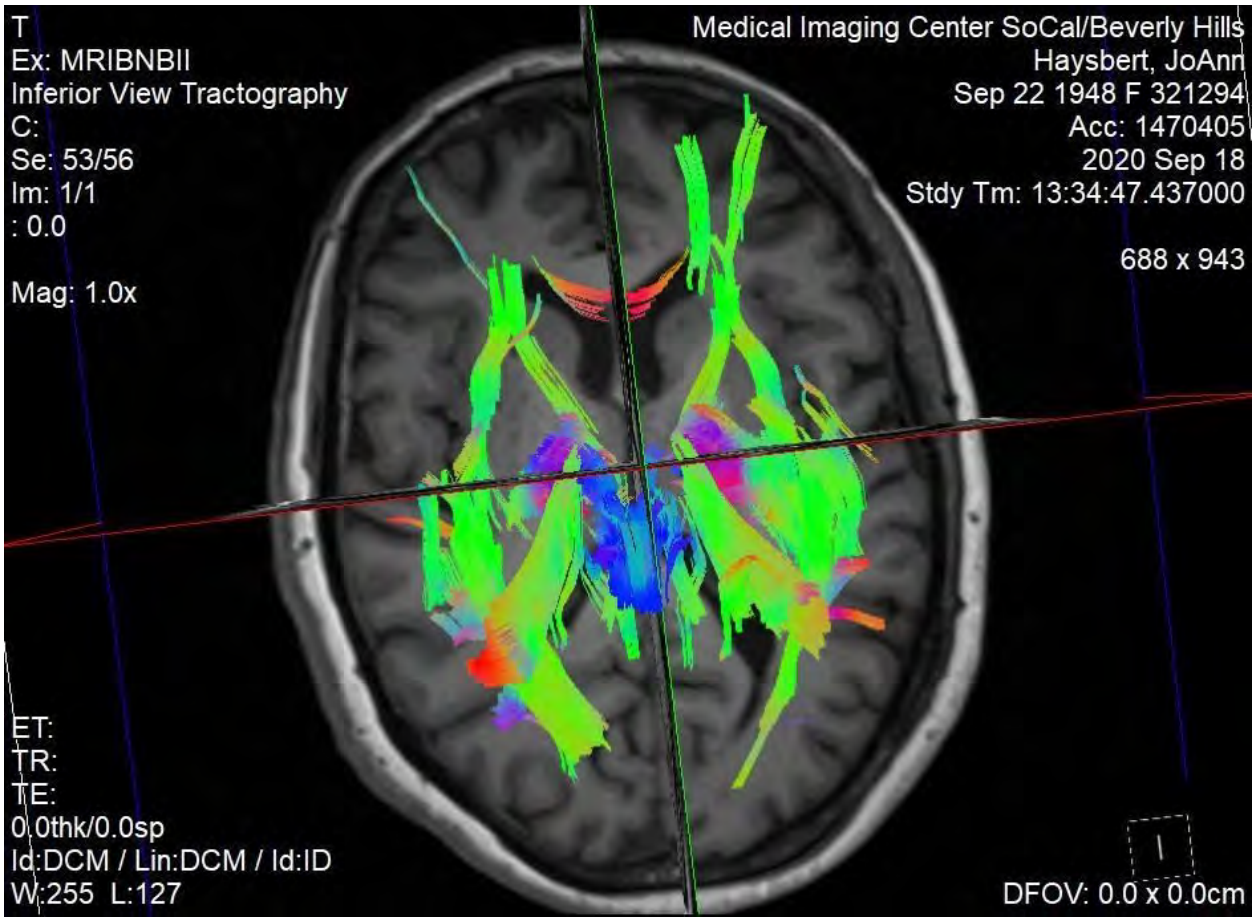

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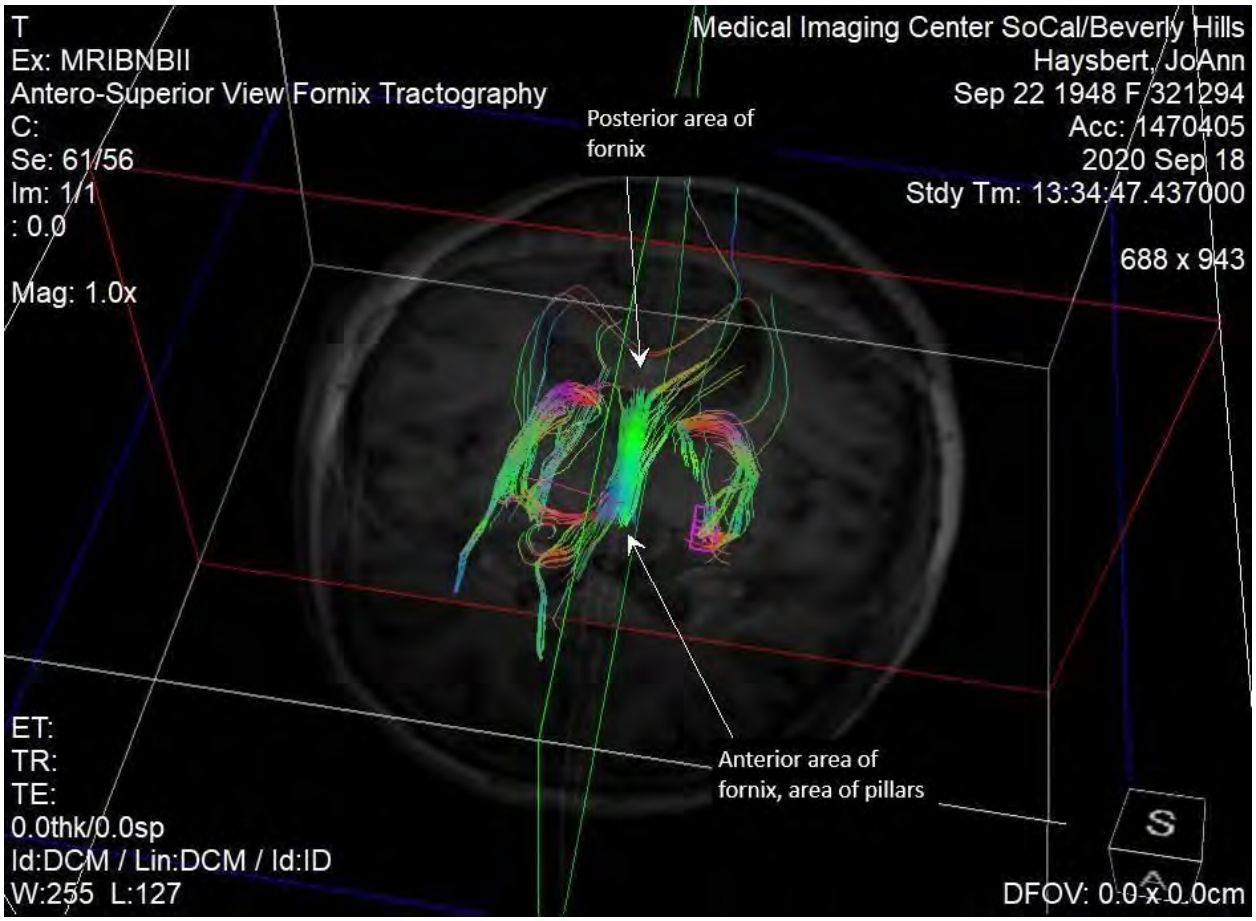

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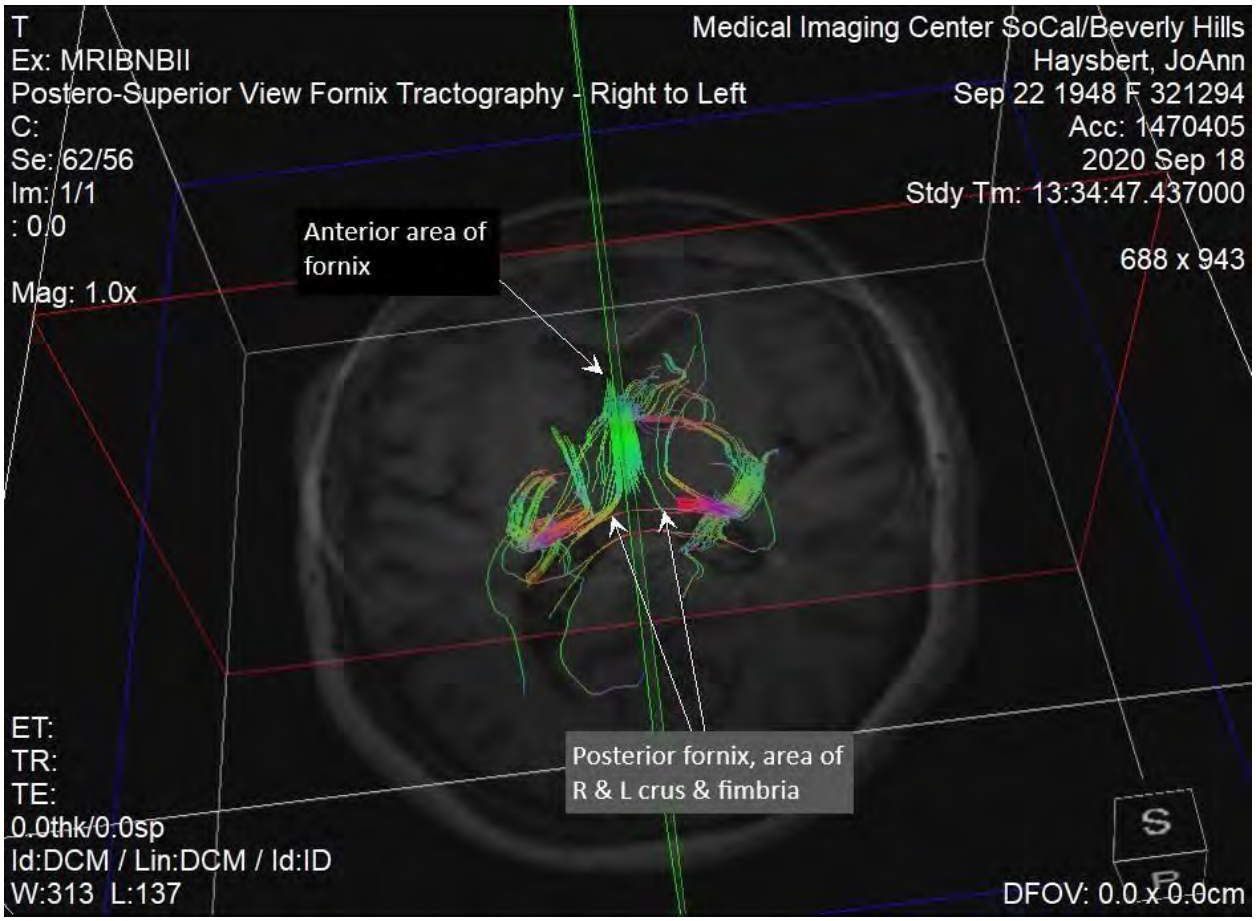

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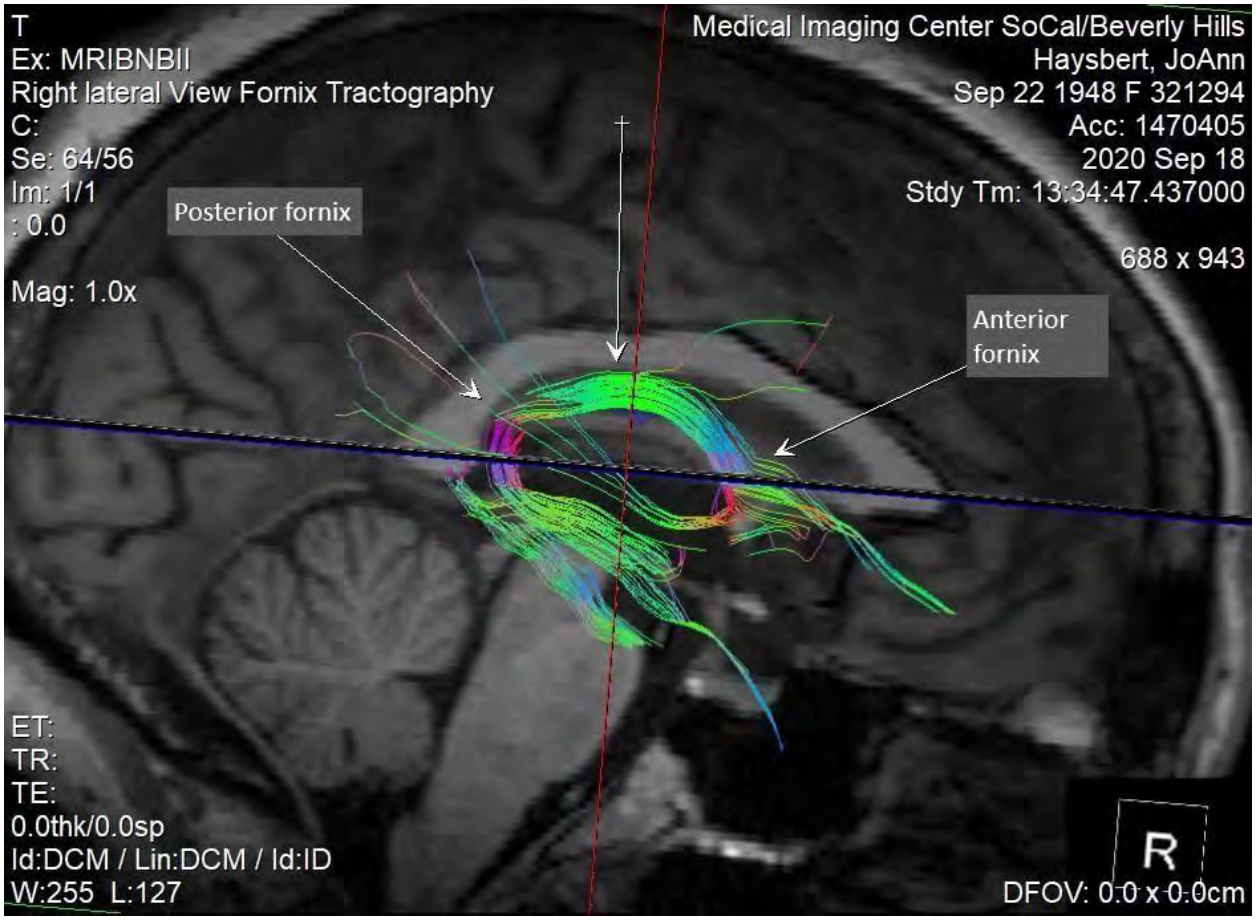

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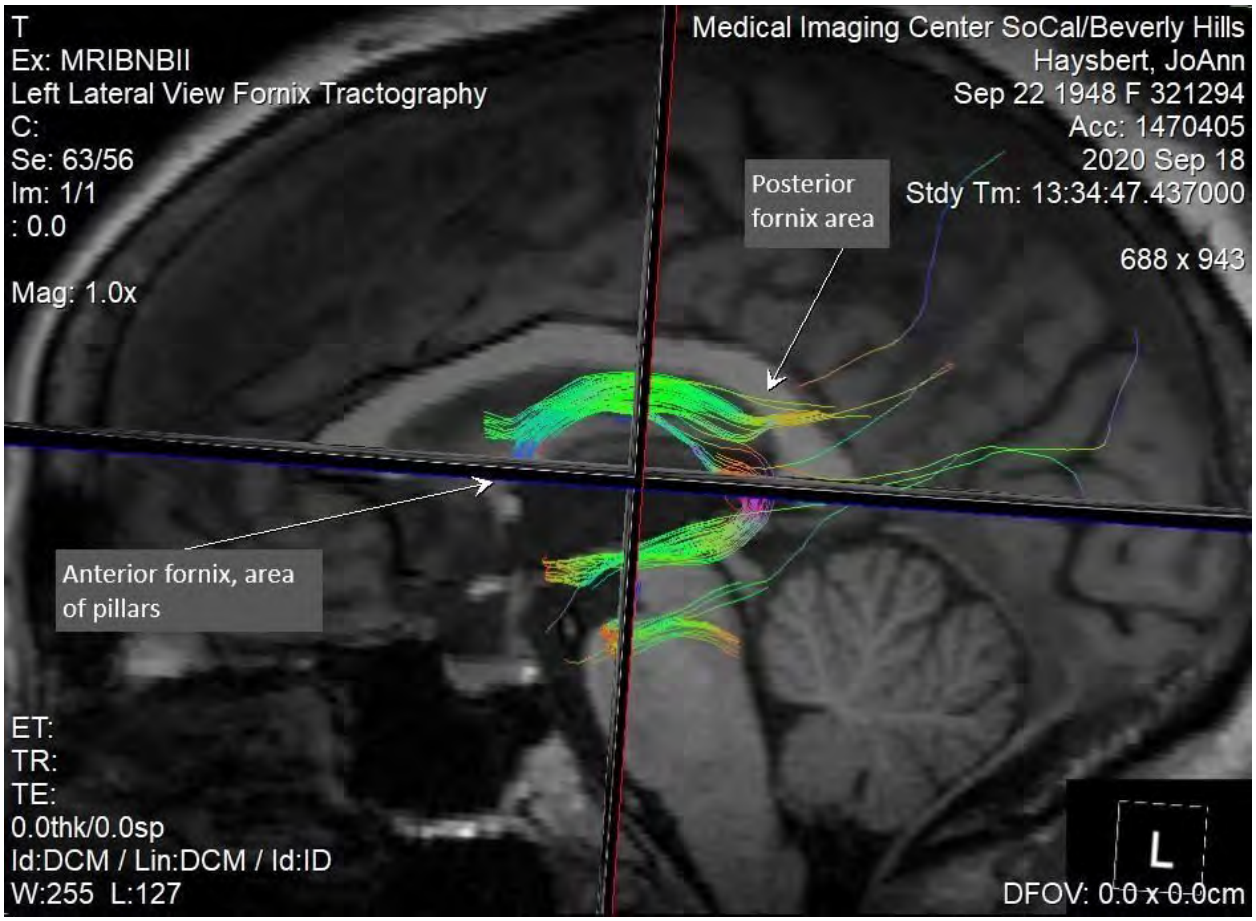

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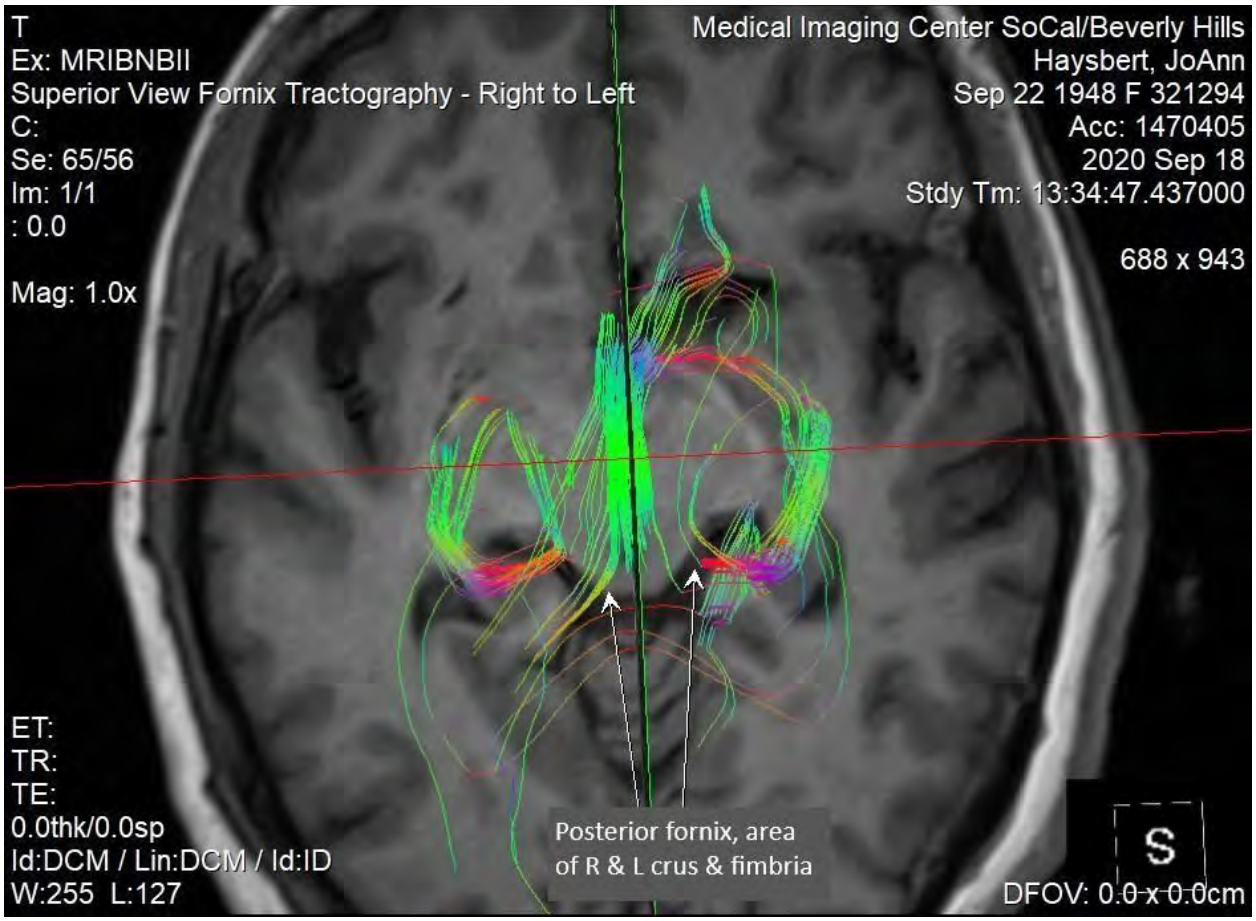

Routine Brain and SWI MRI FINDINGS: These images demonstrate the brain anatomy at 3-Tesla and using a number of image sequences and image planes. The brain images are obtained in coronal, axial, and sagittal planes and include the following the coronal T2 MP GRE HEMO and or SWI (SWAN) sequence for micro bleeds, sagittal T2 FLAIR, axial T2 FLAIR, axial T2, axial T1 MP RAGE, coronal T2 FLAIR FS, as well as a variety of analytical evaluations including susceptibility-weighted imaging (SWI) and maximum intensity projection SWI in the coronal plane. Susceptibility weighted imaging accentuates the effect of elemental iron deposited in a brain location by bleeding or "micro-hemorrhages" in the past.

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IMAGE FINDINGS: The routine brain imaging shows generally normal gyral-to-sulcal proportions for age and just some very slight generalized atrophy. The ventricles are generally normal in size, shape and position, with just some slight dilatation, particularly in the posterior occipital horn on the left side, which may reflect some tissue loss such as an atrophy process, perhaps possibly prior stroke or congenital right to left difference. The cerebellar tonsils are normal in position. The pineal region generally is normal. The FLAIR imaging demonstrates extensive FLAIR abnormalities which are expected for age. These are of unclear clinical significance. They are distributed bilaterally through posterior parietal lobe, occipital, and frontal lobes. These may reflect microvascular abnormalities, infectious abnormalities, they can reflect trauma. The general and diffuse distribution tends to suggest chronic, perhaps asymptomatic basis. The clinical significance is unclear. The susceptibility-weighted imaging does not demonstrate any clear areas of microhemorrhage. There is no mass effect or midline shift. There are no extra axial collections of fluid or blood. The sella and parasellar regions are normal. The posterior fossa is normal. The mastoid cells are clear. The sinuses and orbits are normal.

IMPRESSION and OVERALL IMPRESSION: Overall impression is generally normal routine brain imaging with some expansion of the left occipital horn of the lateral ventricle which may reflect some prior volume loss. Extensive FLAIR abnormalities of unclear clinical significance, not specifically related in location to the areas of fractional anisotropy losses. The fractional anisotropy analysis and the tractographic analysis both demonstrate problems in the frontal lobe associated with the white matter stem of the superior, middle and inferior frontal gyri with expected effects of impairment of multistep planning, map-based planning and emotional control release functions. Both demonstrate problems in the angular gyrus in the left parietal lobe which for this right-handed individual would be expected to have the effect of impairment of word finding and calculation ability. Losses appreciated both in both evaluations with regard to the arcuate fasciculus which can affect prosody or flow of speech as well as the other aspects of speech processing. There are losses in the fornix which would be expected to have the effect of impairment of new memory formation. The tractographic analysis additionally demonstrates problems bilaterally in the supra-callosal cingulum which would have the expected effects of increased anxiety and depression. The fractional anisotropy analysis additionally demonstrates some low numbers for the occipital lobe on the left which may reflect impairment of processing of visual information arising on the right side of the body. Some low numbers for the left uncinate fasciculus and inferior frontal occipital fasciculus, not quite statistically significant, but may reflect problems such as flattening of affect and loss of emotional drive and some types of visual recognition phenomena. There are low numbers in the left hippocampal cingulum and to a lesser extent in the right hippocampal cingulum which may reflect problems with attention, and some low numbers on the medial lemniscus, particularly on the left side, which may reflect impairments associated with the midbrain such as difficulties with pupillary accommodation, eye movement, convergence, and possible associated with symptoms such as photophobia. Overall, these findings demonstrate

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multiple abnormalities which would be expected to have effects on cognition, emotional behavior and neurologic functions as detailed above. The severity of the abnormalities appreciated in the imaging would be expected to have clinically significant symptoms. The locations and types of injury are consistent with the mechanics of the trauma as described.

Signed:

Aaron Filler, MD, PhD
Neurography Institute Medical Associates

Diplomate, American Board
of Neurological Surgery

Fellow of the Royal College of
Surgeons of England

Fellow of the Intercollegiate Board in
Surgical Neurology of England,
Ireland, Edinburgh & Glasgow

Fellowship in Complex Spinal Surgery
- UCLA

Fellowship in Peripheral Nerve
Surgery-
LSU

Director, Institute for Nerve

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Medicine, Santa Monica, CA

Director, Center for Advanced Spinal Neurosurgery, Santa Monica, CA

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Curriculum Vitae

June 25, 2020

Aaron G. Filler, MD, PhD, FRCS, JD

President (2015-16) & General Counsel - Society for Brain Mapping and Therapeutics
Diplomate, American Board of Neurological Surgery
Fellow of the Royal College of Surgeons of England
Fellow of the Intercollegiate Board in Surgical Neurology of England, Ireland, Edinburgh & Glasgow
Fellowship in Complex Spinal Surgery - UCLA
Fellowship in Peripheral Nerve Surgery - Louisiana State University, New Orleans, LA
Fellowship in Neuroimaging - University of London
Director, Institute for Nerve Medicine, Santa Monica, CA
Director, Center for Advanced Spinal Neurosurgery, Santa Monica, CA
Medical Director, Neurography Institute, Santa Monica, CA
Section Editor for Peripheral Nerve, Youmans & Winn Textbook of Neurological Surgery
Lieutenant Colonel, US Army Reserve, Medical Corps, Retired
Commander, 1466th Med Team, Neurosurgery, United States Army Reserve, Retired
Course founder: Biomechanics & Comparative Primate Anatomy, Harvard University
Joint Guidelines Committee, American Association of Neurological Surgeons & Congress of Neurological Surgeons – Washington Committee
Guidelines Committee, Disorders of Spine & Peripheral Nerve Section - AANS & CNS
Spinal Fusion Guidelines Reviewer - American Association of Neurological Surgery & Congress of Neurological Surgery – Washington Committee (2013)
Course Director - Billing and Coding: Medicine and Law - American Society for Peripheral Nerve 2013-2014
Course Faculty - Peripheral Nerve Surgical Anatomy and Dissection Course for for Neurosurgery Senior Residents (2014) Neuroscience Research and Education Fund, AANS, Baltimore, MD
Cedars Sinai Medical Staff, Continuing Education Committee Member (2014 to 2016)
State Bar of California No. 302956, President - Tensor Law, P.C.

Office Address

California:
Institute for Nerve Medicine
900 Wilshire Blvd., Suite 310
Santa Monica, CA 90405
Phone: (310) 314-6410
Fax: (310) 314-2414

E-Mail: afiller@nervemed.com
Web: www.nervemed.com
Web: www.backpain-guide.com

Date of Birth October 21, 1956

Place of Birth Washington, D.C.

Education

High School	Walt Whitman H.S., Bethesda, MD	(9/71 – 6/74)
BA '77 with honors	University of Chicago, Chicago, IL Date of Diploma: June 20, 1977	(9/74 – 6/77)
MA '79	University of Chicago, Chicago, IL Date of Diploma: December 17, 1979	(9/77 – 6/79)
MD '86	University of Chicago, Chicago, IL Date of Diploma: June 13, 1986	(9/77 – 6/79 & 6/84 – 6/86)
PhD '86	Harvard University, Cambridge, MA Date of Diploma: June 5, 1986	(8/79 – 6/86)
Neurosurgical Residency	University of Washington, Seattle, WA	(6/86-6/94)
FRCS (SN) '94	Intercollegiate Board in Surgical Neurology Royal Colleges of Surgeons, England, Glasgow, Edinburgh, and Ireland	
FRCS '07	Fellow of the Royal College of Surgeons of England	
JD '14	Concord Law School, Kaplan University Date of Diploma: January 2, 2015	(9/10-12/14)

Post-Graduate Medical Education

6/86 – 6/94 Neurosurgical Residency
Department of Neurological Surgery
University of Washington, Seattle, WA
General Surgery Rotating Internship (6/86-6/87)
Neurosurgical Resident & Chief Resident (7/87-6/94)
Univ. of Washington Hospitals and Clinics
Harborview Medical Center, Seattle, WA
Seattle Veterans Administration Hospital
Children's Hospital Medical Center, Seattle, WA
Atkinson Morley's Hospital, London, U.K. &
St. George's Hospital Med School, London, UK
Including 18 months MRI Basic Science
& Research 12/90 to 5/92

6/94 – 6/95 Wellcome Trust Clinical Fellow in Magnetic Resonance Nerve Imaging
CRC Magnetic Resonance Research Group
Div. of Biochemistry, St. George's Hosp. Med. School,
& Departments of Neurosurgery and Neuroradiology

Atkinson Morley's Hospital, London, U.K.

7/95 – 6/96 Spine Fellow
Professors Ulrich Batzdorf, J. Patrick Johnson, Duncan McBride
Complex Spine Reconstruction and Syringomyelia
Division of Neurosurgery
University of California Los Angeles
UCLA Medical Center, Los Angeles, CA

3/96 – 6/96 Peripheral Nerve Fellow
Professor David Kline
Department of Neurosurgery
Louisiana State University
New Orleans, LA

Legal Education

2/2015 California Bar Exam 2/24/15 - 2/26/15
- passed at first opportunity

9/7/2010 –12/2014 JD - Concord Law School (12/12/14)
Los Angeles, California
Date of Diploma 1/3/15

10/2011 FYLSE – State Bar of California (October 25, 2011)
First Year Law Students Examination
– passed exam at first opportunity

11/2013 MPRE - Multistate Professional Responsibility Exam
- passed exam at first opportunity

11/2013 - present Certified Law Student - California Sate Bar
PTLS - Practical Training of Law Students
California Rules of Court 9.42
Certification #: 34114

9/2010 – present California Bar Association
Student File # 403403

Academic and Faculty Positions

2008 - 2009	Section Editor - Peripheral Nerve Surgery - Youman's Textbook of Neurological Surgery, 6th Edition Elsevier. (in press). Richard Winn, Editor in Chief
2005 - 2008	Director, Peripheral Nerve Surgery Program Cedars Sinai Medical Center & Neurosurgical Residency Program Cedars Sinai Medical Center, Los Angeles, CA
2001 - 2005	Director, Peripheral Nerve Surgery Program Century City Hospital, Los Angeles, CA
1996 - 2001	Assistant Professor of Neurosurgery, UCLA Co-Director, UCLA Peripheral Nerve Surgery Program Co-Director, UCLA Interventional MRI Program Director, UCLA Pediatric & Obstetric Brachial Plexus Injury Program Associate, Comprehensive Spine Program Faculty, Neurosurgical Spine Surgery Fellowship Prog. Division of Neurosurgery UCLA Medical Center Los Angeles, CA
1995 - 2001	Clinical Assistant Professor Department of Neurological Surgery University of Washington, Seattle
2000	Faculty, Review Course for Board Certification American Association of Neurological Surgeons
1995 - 1996	Clinical Instructor Division of Neurosurgery UCLA Medical Center
1994 - 1995	Wellcome Trust Lecturer Division of Clinical Neuroscience & Division of Biochemistry St. George's Hospital Medical School University of London, London, U.K.
1992 - 1994	Acting Instructor in Neurological Surgery Department of Neurological Surgery University of Washington, Seattle

1991 - 1992	Clinical Lecturer - NeuroImaging Division of Biochemistry & Clinical Neuroscience Unit St. George's Hospital Medical School
1990 - 1991	Visiting Research Fellow Division of Biochemistry Department of Cell & Molecular Science St. George's Hospital Medical School London, U.K.
1980 - 1983	Research Advisor for Undergraduates Biological Anthropology Harvard University
1980 - 1982	Special Lecturer - Biomechanics & Comparative Primate Anatomy - Laboratory Methods Course Biological Anthropology Harvard University
1979 - 1983	Teaching Fellow - General Ed., Biology & Biological Anthropology Harvard University Cambridge, MA
1977 - 1978	Research Fellow, Department of Anatomy, University of Chicago

Research Support

June '77 - August '77	University of Chicago School of Medicine, Medical Student Research Stipend Department of Anatomy, University of Chicago "Morphometric Analysis of Macropodid Skulls"
Feb. '81 - Feb. '84	NIH PHS Musculo-Skeletal Training Grant Department of Biology, Harvard University NIH PHS #5 T32 GM07117-09 0011 "Evolution of the Mammalian Spine"
Feb. '88 - Sept. '88	NIH Neurosurgery Training Grant Dept. of Neurol. Surg., Univ. of Washington Seattle 5T32 NS-07144-09 "Imaging of Axonal Transport"

Jan. '91 - May '92	Neurosciences Research Foundation Atkinson Morley's Hospital, Harrison Clinical Lectureship Division of Clinical Neuroscience, St. George's Hosp. Med. School, Univ. of London "MR Imaging of Axonal Transport" ($80,000)
Oct. '91 - May '92	Nycomed Imaging, AS, Oslo, Norway - Academic Investigator Support Div. of Biochemistry, St. George's Hospital Medical School, University of London. Principle Investigator. " Axonal Transport of Ferrite MR Contrast Agents" ($25,000)
May '94 - June '95	Wellcome Trust Clinical Fellowship Division of Clinical Neuroscience & Division of Biochemistry St. George's Hospital Med. School, Univ. of London "MR Imaging of Neural Tracts" ($75,000)
July '95 - June '96	UCLA Department of Radiological Sciences Pilot Assessment of MR Neurography for Cervical and Lumbar Spinal Imaging
Sept. '97 - Nov. '97	Nycomed Imaging, AS, Oslo, Norway - Black blood contrast agents for enhancement of Neurography - pilot study. ($10,000)
Jan. '98 - June '99	U.K. Dept of Trade and Industry - SynGenix LTD, Targeted Drug Delivery to the CNS. ($100,000)
Jan. '99 - Dec. '01	SynGenix LTD Axonal Transport for Drug Delivery ($1.3 million)
Sept. '01 - Sept. '03	SynGenix LTD Axonal Transport for Drug Delivery ($8 million)

Academic Meeting Session Chairman

3/20/2010	Filler AG. MRI Imaging. 2nd Chongqing International Clinical Neuroscience Forum & International NeuroDrug Conference, Chongqing, People's Republic of China, 2010重庆国际神经病学论坛

6/25/2010	Filler AG. MRI Imaging. NeuroTalk BIT 1st Annual Congress, Singapore. June 25, 2010.
3/15/2012	Filler AG. Neuroscience Imaging. International Neuroscience Conference – Omori Medical Center, Toho University, Tokyo, Japan, 東邦大学医療センター大森病院
5/14/2013	Filler AG. Multi-modality Imaging. Society for Brain Mapping & Therapeutics, 10th Annual World Congress. Baltimore Convention Center, Baltimore, MD
1/11/2014	Filler AG and Malessy MJ. General Scientific Session. American Society for Peripheral Nerve, Maui, Hawaii
1/12/2014	Filler AG. Medical and Legal Aspects of Coding and Billing for Peripheral Nerve Surgery. American Society for Peripheral Nerve, Maui, Hawaii
3/7/2015	Filler AG. Peripheral Nerve Session I Society for Brain Mapping and Therapeutics, Los Angeles Convention Center, Los Angeles, California
4/8/2016	Filler AG. Policy, Ethics and the Law in Neuroscience: Society for Brain Mapping and Therapeutics, Miami Florida.

Medical & Board Certifications

1987	Diplomate National Board of Medical Examiners of U.S.A. NBME # 214994
1994	Diplomate American Board of Neurological Surgeons, Primary Exam for Board Eligibility
1994	Diplomate Neurological Surgery Residency Training Department of Neurological Surgery University of Washington, Seattle, WA

1994 Diplomate
Intercollegiate Board in Surgical Neurology
of the Royal Colleges of Surgeons of
Edinburgh, Glasgow, England, and Ireland.
(equivalent to FRCS {SN})

1999 Diplomate
American Board of Neurological Surgeons,
Oral Exam for Board Certification
ABNS Cert. #99073, 11/17/99 to 12/31/2009
Recertification #17043, expiration 12/31/2019

Medical Licensure

California State
Physician & Surgeon G81778 7/
1995 - current

California State
Fluoroscopy Supervisor and Operator: RHC 145535
11/1998 - current

Florida
Medical License #: ME 118548
1/17/14 - current

Indiana
License #: 01070287A
9/29/2011 to current

Massachusetts
License #:245500
4/4/2012 to current

Michigan
Medical Doctor #:4301104352
12/3/2013 to current

New York State
License # - 254556
8/19/2009 to current

Nebraska
License # 26935
8/24/2012 to current

Ohio
License #: 35098599
2/5/2012 to current

Pennsylvania State
Medical Physician & Surgeon MD423086
10/03 – current

Utah State
Medical License 5267292-1205
1/27/2004 to 1/31/2006

Virginia
Medicine & Surgery License #0101252705
9/6/12 to current

Washington State
Physician and Surgeon License #MD00025619
6/30/88 - 10/21/06

U.K. General Medical Council
Medical Practitioner Limited Registration: 89/1233
12/89 - 5/95

U.K. General Medical Council
Medical Practitioner Full Registration: 4439398
7/97 - current

DEA: BF0683777
6/88 – current

Bar Admissions

State Bar of California
Bar Membership # 302956
May 18, 2015

Federal District Court,
Central District of California
June 17, 2015

Court of Appeals for the Federal Circuit
July 7, 2015

Court of Federal Claims
January 30, 2019

Advanced Cardiac Life Support Certification

3/06 - present	Advanced Cardiovascular Life Support (ACLS)
3/06 - present	Basic Life Support (BLS)
2/13 - present	Pediatric Advanced Life Support (PALS)

Medical Staff Privileges

6/94 – 6/96	University of Washington Medical Center, Seattle, WA
6/94 – 6/96	Harborview Medical Center, Seattle, WA
6/96 – 6/97	Madigan Army Medical Center, Seattle, WA
6/96 – 6/97	Olive View-UCLA Medical Center, Los Angeles, CA
7/96 – 7/09	UCLA Medical Center, Los Angeles, CA
5/01 – 7/05	Century City Hospital, Los Angeles, CA
1/04 – present	Midway/Olympia Hospital Med Center, Los Angeles, CA
7/01 - present	Cedars Sinai Medical Center, Beverly Hills, CA
10/03 – present	St. John's Health Center, Santa Monica, CA

Membership in Professional Societies

Society for Brain Mapping & Therapeutics

International Society for Magnetic Resonance in Medicine

Society for Neuroscience

Los Angeles County Medical Association

California Medical Association

American Medical Association

American Association for the Advancement of Science

North American Spine Society

American Association of Neurological Surgeons

Congress of Neurological Surgeons

Joint Section for Peripheral Nerve & Spine of the AANS and CNS

Society of British Neurological Surgeons

Visiting Professorships

University of London
Atkinson Morley's Hospital
St. George's Hospital Medical School
Department of Neurosurgery
London, England, U.K. 10/21/97

Harvard University
Beth Israel/Deaconess Hospital
Harvard Medical School
Department of Anesthesia
Cambridge, Massachusetts 11/2/99 –11/3/99

Academic Honors and Awards

Pioneer in Medicine Award (2016) for invention of Diffusion Tensor Imaging (DTI)
Society for Brain Mapping & Therapeutics

SMART Award. UK Department of Trade and Industry
Highly competitive national award in UK for technology in SynGenix LTD (1997)

Wellcome Trust Clinical Fellowship
(5/94) Division of Clinical Neuroscience
& Division of Biochemistry
St. George's Hospital Medical School
University of London

Harrison Clinical Lecturer in Neuroscience
(1/91-5/92) Division of Clinical Neuroscience
St. George's Hospital Medical School
University of London

NIH PHS Musculo-Skeletal Training Grant
(2/81-2/84) Department of Biology,
Harvard University

Faculty Search Committee,
Department of Anthropology,
Harvard University (9/82-9/83)

Bachelors Degree with Honors, (1977)
University of Chicago

Howell Murray Award, (1977)
University of Chicago

Technical Course Certifications

Midas Rex Bone Dissection 4/93 - current

Oratec Intradiscal Electrothermal Therapy 12/98 - current

Academic Symposia

11/98	Fifth Workshop on Obstetric Brachial Plexus Lesions Atrium MC, Heerlen, Netherlands

Editorial Appointments

7/08 – present	Youmans Neurological Surgery Section Editor – Peripheral Nerve

Peer Scientist Reviewer for Academic Journals

3/95 - present	JMRI, (Journal of Magnetic Resonance Imaging)
9/04 – present	Journal of Human Evolution, Harvard University
10/06 - present	Neuroradiology

4/07 – present	Journal of Neuroimaging
6/09 – preset	NeuroImage
7/09 - present	Clinical Anatomy
4/10 – present	PLOS One
9/10 - present	Journal of Neurological Sciences
11/10 - present	Neurosurgery

University Committees

9/82 - 9/83	Faculty Search Committee, Department of Anthropology, Harvard University
2004	Examiner for Doctoral Thesis School of Medicine University of London

Consultant Appointments

11/97 – 11/98	General Electric Medical Systems IntraOperative MRI Medical Advisory Board

Business Positions

7/15 – present	Managing Partner Tensor Law, P.C. 2716 Ocean Park Blvd., #3082 Santa Monica, CA 90405 Phone: 310 450-9689 www.tensorlaw.com
11/93 – 3/04	Co-Chief Scientific Officer, Director, & Co-Founder SynGenix Ltd. (English Reg. # 2740120) Babraham Hall Babraham Cambridge, CB2 4AT, UK Phone: (011 44 1223) 496-093 Fax: (011 44 1223) 496-018

1/04 – present	CEO and Co-Founder, Director Molecular Synthetics Inc. 2716 Ocean Park Blvd., Suite 3082 Santa Monica, CA 90405 Phone 310 314-6410 Fax: 310 314-2414 Babraham, Cambridge, UK Office Phone: (011 44 1223) 496-121 www.molecularsynthetic.com
12/98 - present	CEO and Co-Founder, Director NeuroGrafix, Inc. 2716 Ocean Park Blvd., Ste. 3035 Santa Monica, CA 90405 Phone: (310) 664-3944 Fax: (310) 664-3949 www.neurography.com
4/2008 – 10/2008	Host – The Pain Free Hour – CBS Radio/KLSX with Kerri Kasem and Shirlee Jackson

Event Management

9/75 - 6/78	Chairman and Founder: Major Activities Board University of Chicago Booking, marketing and staging for concerts
9/77 - 4/78	Chairman: Festival of the Arts University of Chicago Booking, marketing, scheduling, advertising
9/73 - 9/74	International Vice President United Synagogue Youth Convention Planning, Budget Planning
9/73 - 4/74	Chairman: Conference on American Civilization National Association of Student Councils Booking, scheduling, supervision of committee staffs

Non-Technical Writing

9/75 - 6/77	*Chicago Maroon* (University of Chicago) General reporting
6/77 - 10/79	*Chicago Reader* Freelance feature writer

Technical Theater Experience

3/74 - 5/74	Stage Manager Walt Whitman High School Talent Show
6/75 - 9/75	Technical Lighting and Construction Assistant Court Theatre, Chicago
9/75 - 6/78	Technical Manager, Stage Manager, Director University Theatre, University of Chicago
1/75 - 6/78	Technical Manager, Stage Manager, Director Blackfriars, University of Chicago

Athletic Leadership

9/73 - 6/74	Co-Team Captain Walt Whitman High School Track and Field Team
9/73 - 6/74	Varsity Letterman Cross Country Team, Walt Whitman High School Track and Field Team, Walt Whitman High School
11/10 - 6/11	Referee Coordinator AYSO Pacific Palisades All Stars Soccer

Military Service

7/94 - 2/97	Commander 1466th Med. Detachment, Neurosurgery and Major, Medical Corps United States Army Reserve Fort Lawton, Bldg. S-544 Seattle, WA 98199 Phone: 206 281-3081, Fax: 206 281-3499

3/97 - 08/01	Major, United States Army Reserve, Medical Corps Independent Ready Reserve
08/01 – 10/02	Lieutenant Colonel, United States Army Reserve, Medical Corps Independent Ready Reserve
10/02 – present	Lieutenant Colonel, United States Army Reserve, Medical Corps, Retired.

Publications

Published Articles

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Johnson JP, Filler AG, McBride DC, Batzdorf U. Anterior cervical foraminotomy for unilateral radicular disease. *Spine* 25 (8): 905-909 (2000).
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Filler AG. Needle Guide. US Provisional Application 60/546,664 filed 2/20/04. US Patent Application Publication 20050187533A1. Filed 11/20/04. US 7,059,368. Issued 6/13/2006. http://www.google.com/patents/US7059368

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Filler AG, Johnson JP, Machleder H, Villablanca P, Lufkin RB, Hayes CE, Maravilla K, Farahani K, Kliot M. MR Neurographic findings in diagnosis of thoracic outlet syndrome. Congress of Neurological Surgeons Annual Meeting, September 27 - October 2, New Orleans, LA. *Neurosurgery* 41:724 (1997).

Choi WW, Johnson JP, Filler AG, McBride DQ, Sandhu HS. Simultaneous versus staged anterior and posterior spinal reconstruction: a comparative study. Congress of Neurological Surgeons Annual Meeting, September 27 - October 2, New Orleans, LA. *Neurosurgery* 41:724 (1997).

Filler AG, Lufkin RB, Villablanca P, Farahani K, Prager J, Johnson JP. MR Neurography & interventional MRI in diagnosis and treatment of sciatica from piriformis syndrome. 2nd Interventional MRI Symposium. European Society for Magnetic Resonance in Medicine and Biology, October 17-18, Düsseldorf, Germany. *European Radiology* 7:1159-60 (1997).

Filler AG, Villablanca P, Lufkin RB, Prager J, Johnson JP. MR Neurography and open MRI in management of piriformis syndrome. 12th Annual Meeting, North American Spine Society. October 22-25, New York, NY. (1997).

Villablanca P, Filler AG, Haynes JA, Tarlo KS. Black blood contrast agents for improved neural selectivity in MR Neurography. American Society for Neuroradiology, 36th Annual Meeting. May 17-21. Philadelphia, PA. (1998).

Johnson JP, Ahn S, Choi W, Masciopinto J, Kim K, Filler A, DeSalles A. Thoracoscopic sympathectomy: techniques and outcomes. Congress of Neurological Surgeons 48th Annual Meeting. October 3-8. Seattle, WA. (1998).

Masciopinto JE, Kim K, Johnson JP, Filler A, Pare L, McBride D, Batzdorf U. Anterior cervical foraminotomy. Congress of Neurological Surgeons 48th Annual Meeting. October 3-8. Seattle, WA. (1998).

Masciopinto JE, Kim KD, Johnson JP, Choi WW, Filler AG, Sandhu HS, McBride DQ, Gelabert H. Simultaneous versus staged anterior and posterior spinal reconstruction: A comparative study. North American Spine Society, 13th Annual Meeting. October 28-31. San Francisco, CA. (1998).

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Johnson JP, Ahn SS, Choi WW, Masciopinto JE, Kim KD, Filler AG, DeSalles AAF. Techniques and outcomes of thoracoscopic sympathectomy. Joint Section for Spine and Peripheral Nerve AANS/CNS. Orlando, Florida, February 1999.

Villablanca JP, Gupta R, Filler A. Experimental neurography in rats at 1.5T – compressive nerve injury model. American Association for Hand Surgery & International Society for Reconstructive and Microsurgery. Los Angeles, California, June 1999.

Johnson JP, Hahn MS, Obasi C, Choi W, Filler A, Sandhu V, McBride DQ, Gelabert H. Simultaneous versus staged anterior and posterior spinal reconstruction: a comparative study. Congress of Neurological Surgeons 43rd Annual Meeting, Boston, MA, November 1999.

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Obasi C, Johnson JP, Filler A, Park J. Failure of Screw-Plate Fixation in Patients with Osteoporosis and 3-Column Instability. Danek: Spine, Science, Management, New Orleans, LA, November 19, 1999.

Filler AG, Tarlo KS, Haynes JA, Villablanca JP. Iron oxide black blood contrast agent improves nerve image selectivity in MR Neurography. Int. Society for Magnetic Resonance in Medicine, Annual Meeting, Denver, CO, April 2000.

Whiteside G, Bacon M, Filler AG, Frederickson M, Abell C, Munglani R, Lever AML. Treatment of neuropathic pain by axonal transport. Society for Neuroscience Annual Meeting, New Orleans, LA, November 7, 2000.

Filler AG, Haynes J, Villablanca JP, Prager J, McBride D, Batzdorf U, Johnson JP. Sciatica of Non-Disk Origin: Diagnosis by MR Neurography and Interventional MRI with Outcome Study of Resulting Treatment. Congress of Neurological Surgeons, San Diego, CA, October 2, 2001.

Filler AG, Haynes J. Brachial plexus neurolysis with adhesiolytic agents for neurogenic thoracic outlet syndrome patients diagnosed by MR Neurography:

Outcome study results. American Society for Peripheral Nerve. Cancun, Mexico, January 13, 2002.

Filler AG, Haynes J, Villablanca P, Prager J, McBride D, Farahani, K, Batzdorf U, Johnson, JP. Sciatica of Non-Disk Origin: Diagnosis by MR Neurography and Interventional MRI with Outcome Study of Resulting Treatment. American Society for Peripheral Nerve. Cancun, Mexico, January 13, 2002.

Filler AG, Whiteside G, Bacon M, Frederickson M, Abell C, Munglani R, & Lever AMLL. Treatment of neuropathic pain by axonal transport. Joint Section for Disorders of Spine and Peripheral Nerve, AANS/CNS. Orlando, Florida, March 3, 2002.

Filler AG. Brachial Plexus Neurolysis with Adhesiolytic Agents for Neurogenic Thoracic Outlet Syndrome Diagnosed by MR Neurography: Outcome Study Results. Joint Section for Disorders of Spine and Peripheral Nerve, AANS/CNS. Orlando, Florida, March 2002.

Filler AG. Minimally Invasive Surgical Approach for Decompression of the Sciatic Nerve at the Piriformis Muscle. Congress of Neurological Surgeons, 52nd Annual Meeting, Philadelphia, Pennsylvania, September 21-25, 2002.

Filler AG. MRI Demonstration of reinnervation of muscle by sprouting from a severed nerve in a human subject. 32nd Annual Meeting, Society for Neuroscience, Orlando, FL, November 4-7, 2002.

Tsuruda JS, Filler AG: MR Neurography findings of the bipartite piriformis muscle in the evaluation of sciatica. ASNR 2004.

Filler AG: The utility of MR Neurography in brachial plexus imaging. Joint Section for Disorders of Spine and Peripheral Nerve, AANS/CNS, 22nd Annual Meeting, Orlando, Florida, March 15, 2006

Filler AG. MR Neurography of the brachial plexus for identification of surgically responsive neurogenic thoracic outlet syndrome. Congress of Neurological Surgeons, 56th Annual Meeting, Chicago, IL October 7, 2006.

Filler AG. Real time optical guidance integrated with real time Open MRI for spine and nerve interventions. Congress of Neurological Surgeons, 56th Annual Meeting, Chicago, IL October 7, 2006.

Filler AG. Open MRI for diagnosis and therapeutic interventional procedures in nerve and spine related pain. Joint Section for Disorders of Spine and Peripheral Nerve, AANS/CNS, 23nd Annual Meeting, Phoenix, Arizona March 8, 2007.

Filler AG. Diagnosis and management of pudendal neuralgia. American Association of Neurological Surgeons. 75th Annual Meeting. Washington, DC; April 17, 2007.

Filler AG, Lever AML. Molecular evidence for environmental trigger of mass evolutionary acceleration: An experimental model for the Cambrian explosion. American Association for the Advancement of Science, 88th Annual, Pacific Regional Meeting, Boise, Idaho. June 19, 2007.

Filler AG. A Humanian Model of Human Evolution: Evidence that habitual upright bipedality is a synapomorphy that defines a hominiform clade of hominoids including humans and all extant apes. American Association of Physical Anthropology, 77th Annual Meeting, Columbus, Ohio April 10, 2008. AJPA 135 (S46): p.96

Filler AG. Impact of Cycle Time in Minimal Access Nerve Surgery and Interventional MRI. International Brain Mapping & Intraoperative Surgical Planning Society – World Congress. 5th Annual Meeting. Los Angeles. August 26, 2008.

Filler AG. The anti-symmetric dyadic tensor model, the arctangent tractographic function and their role in the past & intra-operative future of diffusion tensor imaging. International Brain Mapping & Intraoperative Surgical Planning Society – World Congress. 6th Annual Meeting. Harvard Medical School, Boston, MA. August 29, 2009.

Filler AG. Fractional anisotropy and DTI tractography enhance nerve identification in MR Neurography of the lumbo-sacral plexus. Joint Section for Disorders of Spine and Peripheral Nerve, AANS/CNS, 26th Annual Meeting, Orlando, FL, February 18, 2010.

Filler AG. Fractional anisotropy and DTI tractography enhance nerve identification in MR Neurography of the brachial plexus. 2010 Annual Meeting, American Association of Neurological Surgeons, Philadelphia, PA, May 1-5, 2010.

Filler AG. Integration of High Field DTI Data with Real Time Intraoperative Low Field MRI for Millimeter Scale Guidance – When is High Field DTI Guidance Contra-Indicated? International Brain Mapping & Intraoperative Surgical Planning Society – World Congress. 7th Annual Meeting. Uniformed Services University of the Health Sciences, Bethesda, MD. May 24, 2010.

Filler AG. High Field DTI Data in the Setting of Real Time Intraoperative Low Field MRI for Millimeter Scale Guidance – Effects of Mechanical Tissue Distortion by Surgical Instruments. 8th International Interventional MRI Symposium. Leipzig, Germany, Sept. 24-25, 2010.

Filler AG. Interventional MRI Percutaneous Procedures for Extended Relief and Cure of Thoracic Outlet Syndrome. International Brain Mapping & Intraoperative Surgical Planning Society – World Congress. 8th Annual Meeting. UCSF, San Francisco, CA. June 8-10, 2011.

Filler AG. Interventional MRI Percutaneous Procedures for Extended Relief and Cure of Thoracic Outlet Syndrome. Congress of Neurological Surgeons, Washington Convention Center, Washington, DC October 1-6, 2011.

Filler AG. Real time Open MRI Guidance for Percutaneous Nerve Decompression. Society for Brain Mapping & Therapeutics, 10th Annual World Congress. Baltimore Convention Center, Baltimore, MD. May 12-14, 2013.

Presentations and Invited Lectures

Filler AG. Axial Function in Terrestrial Amniotes. The Amniote Seminar. Museum of Comparative Zoology, Romer Library, Harvard University, 10/7/80.

Filler AG. Bipedal Apes Before the Dawn of Man. Presented at the Darwin Festival (on Darwin's Birthday), Dept. of Biology, The Biology Society, Salem State College, Salem, Mass. 2/12/82.

Filler AG. Evolutionary origins of the human upright spine. Presented at 5th annual meeting, Joint Section for Peripheral Nerve and Spine, AANS/CNS, 2/12/89.

Filler AG. Imaging of Axonal Transport. Grand Rounds. Department of Neurological Surgery, University of Washington Medical Center, Seattle, WA, 12/15/89.

Filler AG. Progress in the design of axonally transported intraneural contrast agents for peripheral nerve imaging with MRI. Royal Post-Graduate Medical School, NMR Unit, Hammersmith Hospital, London, UK. 9/24/90.

Filler AG. Mathematical analysis of multiple diffusion gradients for neuronal tract tracing. Resident Research Rounds, Harborview Medical Center, Dept. of Neurol. Surg., University of Washington, Seattle, WA, 8/7/91

Filler AG. Sir Richard Owen, Sir Arthur Keith, and the lost styloid process: Serial homology and the evolution of the human spine. Section of Neurology, Royal Society of Medicine, Registrar's Meeting, London, February 6th, (1992)

Filler AG. Spinel Ferrites and Superparamagnetism in MR Imaging. Division of Biochemistry, Department of Cell & Molecular Biology, St. George's Hospital Medical School, London, 3/15/92.

Magnetism, Spinels, and the Design of Tracers for In Vivo Imaging of Axoplasmic Flow. Neuroscience Seminar, Department of Neurological Surgery, University of Washington, Seattle, 7/25/92.

Filler AG. Diffusion Anisotropy in Magnetic Resonance: Neurography and In Vivo Neural Tract Imaging. Neuroscience Seminar, Department of Neurological Surgery, University of Washington, Seattle, 12/30/92.

Filler AG. Axonal Transport of MR Contrast Agents. Nycomed Imaging, Oslo, Norway, 4/10/93.

Filler AG. MR Neurography in Clinical Medicine. Department of Neurology and Neurosurgery, Columbia University Neurologic Institute, New York, New York, 8/12/93

Filler AG. Evolution of the Axial Skeleton in the Hominoid Apes and Man. Department of Orthopedics, Harborview Medical Center, Seattle, WA, 10/16/93

Filler AG. MR Neurography for Peripheral Nerve Diagnosis. Department of Orthopedics, Harborview Medical Center, Seattle, WA, 1/19/94

Filler AG. Diffusion Anisotropy and Axonal Transport in MR Imaging of Neural Structures. Neurology Study Unit, Seattle, WA, 2/8/94

Filler AG. Diffusion Anisotropy and MR Neurography. Department of Radiology, Addenbrooke's Hospital, Cambridge University, Cambridge, U.K., 11/17/94.

Filler AG. MR Neurography: Clinical Prospects. Presented at meeting of the South of England Neurosciences Association, London, 5/19/95.

Filler AG. Diffusion Anisotropy, Axonal Transport and Endoneurial Fluid in Clinical Magnetic Resonance Neurography. Section of Neurosurgery, Yale University, New Haven, CT, 12/20/95.

Filler AG. New Techniques in MR Imaging: MR Neurography. The role of MRI neurography in imaging of the brachial plexus. Medical Imaging Center of Southern California, Santa Monica, CA, 7/1/96.

Filler AG. Interpretation of MR Neurograms. Long Beach Memorial MRI Center. 11/11/96.

Filler AG. Diffusion Imaging and T2 Neurography in MR Diagnosis of Peripheral Nerve Pathology. UCLA Department of Neurology Outpatient Conference. 11/20/96.

Filler AG, Johnson JP, Farahani K, Lufkin RB. Neurography of the lumbar and sacral spinal nerves. Federation of Spine Associations, American Academy of Orthopaedic Surgeons, February 16, 1997, San Francisco, CA (1997).

Filler AG. Case Presentation: MR Neurography in the Diagnosis of Thoracic Outlet Syndrome in a Patient with Bilateral Hand Pain. Chairman's conference, UCLA Department of Neurology, 3/97.

Filler AG. The Role of Black Blood Contrast Agents and Intraneural Contrast Agents in Magnetic Resonance Neurography. Nycomed Torsten Almen Research Center (TARC), Wayne PA., 6/24/97.

Filler AG. Black Blood Contrast Agents and Intraneural Contrast Agents in Magnetic Resonance Neurography. Nycomed Imaging, Oslo, Norway. 10/14/97.

Filler AG. MR Neurography and Open MRI in the Diagnosis and Management of Extremity Pain. Atkinson Morley's Hospital, London, England, U.K. 10/21/97.

Filler AG. MR Neurography and Interventional MRI in the Diagnosis and Management of Spine and Peripheral Nerve Disorders. General Electric Medical Systems, IntraOperative MRI Medical Advisory Board. Chicago, IL 11/10/97.

Filler AG. MR Neurography for the Evaluation of Nerve Tumors and the Effects of Cancer on Nerves. UCLA Advances in Neurosurgery. 11/15/97.

Filler AG. Progress in the Use of MRI for Management of Peripheral Nerve Disorders. Department of Radiology, UCLA Medical Center. 5/1/98.

Filler AG. Magnetic Resonance Neurography: Application to the Study of Peripheral Nerve Pathology. American Association of Electrodiagnostic Medicine. Orlando, FL. 10/14/98.

Filler AG. MR Neurography and interventional MRI in the diagnosis of sciatica. Department of Surgery Grand Rounds, UCLA Medical Center, 11/18/98.

Filler AG. Imaging of peripheral nerve tumors. Symposium on Peripheral Nerve Tumors. 15th Annual Meeting. Joint Section on Disorders of the Spine and Peripheral Nerves of the AANS/CNS. Orlando, FL 2/11/99.

Filler AG. Open MRI in the management of spine and peripheral nerve pathology. UCLA iMR Program Presentation. Los Angeles, CA 2/17/99.

Filler AG. Imaging of brachial plexus lesions. XIIth Symposium on Brachial Plexus Surgery (A. Narakas Club). Barcelona, Spain 3/14/99.

Filler AG. Magnetic Resonance Neurography for improved preoperative evaluation of brachial plexus disorders. Brachial Plexus Symposium, Obstetrical and Adult. American Association of Hand Surgery & International Society for Reconstructive Microsurgery. Los Angeles, CA 6/22/99.

Filler AG. MR Neurography and open MRI in the management of spine and extremity pain. Grand Rounds, Department of Orthopedics, UCLA Medical Center, Los Angeles, CA 10/9/99.

Filler AG. MR Neurography and Open MRI in the Management of Spine and Extremity Pain. Visiting Professor, Department of Anesthesia, Beth Israel/Deaconess Hospital, Boston, MA 11/3/99.

Filler AG. Diffusion Anisotropy, CNS Tract Tracing and MR Neurography. Research Meeting of Professor John Mazziotta's Brain Mapping Group, December 8, 1999.

Filler AG. Nerve imaging. AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves, Annual Meeting, Indian Wells, CA 2/24/00.

Filler AG. Evolution of the human spine. UCLA Comprehensive Spine Program, Joint Spine Conference, Los Angeles, CA 3/00.

Filler AG. MR Neurography & Open MRI for diagnosis and treatment of spine and peripheral nerve pathology. American Association of Neurological Surgeons, Annual Meeting, San Francisco, CA, 4/12/00.

Filler AG. Neurography for peripheral nerve diagnosis. Department of Neurology Grand Rounds, West Los Angeles Veterans Administration Medical Center. Los Angeles, CA 4/21/00.

Filler AG. MR Neurography, open MRI, and axonally delivered therapy. Millenium Sir Wylie McKissock Neuroscience Lecture. Atkinson Morley's Hospital, Wimbledon, UK. 11/24/2000.

Filler AG. Outcome study of diagnosis and treatment for sciatic of non-disk origin. UCLA Comprehensive Spine Center, UCLA, Los Angeles, CA 3/5/01.

Filler AG. Advances in the diagnosis and treatment of nerve disorders. Department of Surgery Grand Rounds, UCLA, Los Angeles, CA. 4/4/01.

Filler AG. MR Neurography in the diagnosis and treatment of thoracic outlet syndromes. Medical staff grand rounds, Los Robles Regional Medical Center, Thousand Oaks, CA, 5/4/01.

Filler AG. Advances in the diagnosis and treatment of nerve disorders. Medical Center Grand Rounds, Daniel Freeman Memorial Hospital, Los Angeles, CA 6/4/01.

Filler AG. Advances in the diagnosis and treatment of nerve disorders. UCLA Department of Surgery Third Year Medical Student Lecture Series, UCLA Medical Center, Los Angeles, CA 6/8/01.

Filler AG. MR Neurography for diagnosis of spine and peripheral nerve disorders. Institute for Spinal Disorders, Cedars Sinai Medical Center, Los Angeles, CA 8/16/01.

Filler AG. MR Neurography, Open MRI and Axonal Transport in Advanced Diagnosis and Treatment of Nerve Disorders. Grand Rounds, Department of Neurosurgery, Massachusetts General Hospital, Harvard University, Boston, MA, November 1, 2001.

Filler AG. Image diagnosis and surgical neurolysis for neurogenic thoracic outlet syndrome. Symposium on Advances in Vascular Surgery, Chicago, IL, December, 2001.

Filler AG. MR Neurography for the diagnosis of peripheral nerve disorders. Panel Discussion: Innovations in Peripheral Nerve Surgery, American Society for Peripheral Nerve, Cancun, Mexico, January 2002.

Filler AG. Failed lumbar spine surgery & sciatica of non-disk origin: Diagnosis, treatment & outcomes. Grand Rounds, Los Robles Regional Medical Center, Thousand Oaks, CA, June 21, 2002.

Filler AG. Image diagnosis and neuroplasty for neurogenic thoracic outlet syndrome. Dept. of Vascular Surgery Grand Rounds, Cedars Sinai Medical Center, Los Angeles, CA July, 2002.

Filler AG. Chaos and the evolutionary emergence of the human spinal design. Systems Biology Seminar, Santa Monica, CA August, 2002.

Filler AG. MSD Review of Potential for Neurography in Surgical Image Guidance. Philadelphia, PA, September 24, 2002.

Filler AG. MR Neurography and Open MRI in the Diagnosis and Treatment of Disorders Affecting the Spine and Nerves. Grand Rounds, Department of Neurosurgery, University of California Irvine, Orange, CA, April 22, 2003.

Filler AG. Intraneural Drug Delivery via Axonally Transported Molecular Carriers: Novel Pharmaceutical Designs for Intractable Pain Problems. Discovery Research Seminar. Purdue Pharma, Cranbury, New Jersey, September 12, 2003.

Filler AG. MR Neurography and Open MRI for Diagnosis and Treatment of Spine and Nerve Disorders. CME Spine Conference, Institute for Spinal Disorders, Cedars Sinai Medical Center, Los Angeles, CA, December 3, 2003.

Filler AG. Thoracic Outlet Syndrome Does Exist. Controversies in Peripheral Nerve. Joint Section on Spine and Peripheral Nerve AANS/CNS, San Diego, CA, March 20, 2004.

Filler AG. MR Neurography and Open MRI Guided Procedures for Diagnosis and Treatment of Nerve Disorders. Grand Rounds, University of California at San Diego, San Diego, CA, January 13, 2005.

Filler AG. New Developments in Nerve Imaging. Course 202. American Society for Peripheral Nerve, 14th Annual Meeting, Fajardo, Puerto Rico. January 16, 2005.

Filler AG. Diagnosis and Treatment of Sciatica from Piriformis Syndrome: The Impact of New Methods on 'Spine-Related' Peripheral Nerve Symptoms. Current Concepts in Spinal Disorders: Clinical Symposia Series, Cedars Sinai Institute for Spinal Disorders, February 9, 2005.

Filler AG. MR Neurography and Open MRI Guided Procedures for Diagnosis and Treatment of Nerve Disorders. San Diego Neurological Society, San Diego, CA, February 17, 2005.

Filler AG. Open MR Guided Injections in Spine, Nerve and Neuromuscular Disorders. American Society for Spine Radiology, Isla Verdes, Puerto Rico February 24, 2005.

Filler AG. MR Neurography and Open MRI Guided Procedures for Diagnosis and Treatment of Nerve Disorders. AANS Section on Peripheral Nerve, Special Symposium, New Orleans, LA 4-19-05 (2005).

Filler AG. MR Neurography and Open MRI Guided Procedures for Diagnosis and Treatment of Nerve Disorders. San Diego Academy of Neurological Surgery, San Diego, CA 5-25-05. (2005)

Filler AG. Evolution and Comparative Anatomy of Vertebrae in Reptiles and Mammals and the Emergence of Upright Posture in the Apes and Early Ancestors of Humans. Visiting Professor. Cedars Sinai Medical Center, Los Angeles, CA 6-1-05 (2005)

Filler AG. MR Neurography, Open MR Injections & Minimal Access Surgery in the Management of Thoracic Outlet Syndrome. Department of Neurosurgery Grand Rounds, University of California at Irvine, Orange, CA 8-3-05 (2005)

Filler AG. Nerve Imaging Techniques. American Society for Peripheral Nerve, Tucson, Arizona, 1-16-06 (2006)

Filler AG. New Advanced Imaging Techniques In the Diagnosis of Pain Syndromes – Update Session 402: Sciatica of Non-Disc Origin and Piriformis

Syndrome. American Academy of Pain Medicine – Annual Meeting, San Diego, CA 2-25-06 (2006)

Filler AG. How to read an MR Neurography Image. Joint Section for Disorders of Spine and Peripheral Nerve, AANS/CNS, 22nd Annual Meeting, Orlando, Florida, 3-17-06 (2006)

Filler AG. Diagnosis and treatment of sciatica of non-disc origin and piriformis syndrome. In: Controversies in Peripheral Nerve Surgery: Piriformis syndrome – Is it real? American Association for Neurological Surgery, Annual Meeting, San Francisco, CA, 4-26-06, (2006)

Filler AG. MR Neurography, Open MR intervention, minimal access operations and physical exam for brachial and lumbo-sacral plexus disorders. Cedars Sinai Medical Center Neurosurgery Residents Lecture. Cedars Sinai Medical Center, Los Angeles, CA 1-26-07 (2007)

Filler AG. Advances in MR Neurography. ABCs of Peripheral Nerve Course, Joint Section for Disorders of Spine and Peripheral Nerve, AANS/CNS, 23rd Annual Meeting, Phoenix, Arizona 3-9-07, (2007)

Filler AG. MR Neurography – Assessment of the first 5,000 cases. The Kline Festschrift – an International Symposium on Nerve. LSU Health Sciences Center, New Orleans, Louisiana. 10-19-07. (2007)

Filler AG. Minimal access surgery for pelvic nerve entrapments and thoracic outlet syndrome. The Kline Festschrift – an International Symposium on Nerve. LSU Health Sciences Center, New Orleans, Louisiana. 10-20-07 (2007)

Filler AG. Diagnostic distinction – lumbo-sacral radiculopathy vs sciatica of non-disc origin: When to consider piriformis syndrome. Cedars Sinai Medical Center, Institute for Spinal Disorders, Clinical Symposium, Los Angeles, CA 2-13-08 (2008)

Filler AG. Piriformis Syndrome: Real or Not – David Cahill Memorial Controversies Session, Joint Section for Spine and Peripheral Nerve of AANS and CNS. Orlando, FL 3-1-08 (2008).

Filler AG. The Humanian Theory of Human Evolution. Evidence fore early homeotic origin of an upright bipedal hominiform lineage. Los Angeles, MENSA Society. Woodland Hills, CA 2-13-09 (2009).

Filler AG. MR Neurography, open MR guided injections, and minimal access surgery in the management of peripheral nerve disorders. Grand Rounds – University of California at Irvine, Department of Neurosurgery. Irvine, CA 10-14-09 (2009)

Filler AG. The Role of MRI in Diagnosis of Traumatic Lesions and Entrapment Syndromes. American Society for Peripheral Nerve. 2010 Annual Meeting, Boca Raton, FL 1-10-10 (2010).

Filler AG. A historical hypothesis: The first recorded neurosurgical operation: Isis, Osiris, Thoth & the Origin of the Djed Cross. 2nd Chongqing International Clinical Neuroscience Forum & International NeuroDrug Conference, Chongqing, People's Republic of China, 3-20-10, (2010).

Filler AG. Tri-partite complex for axonal transport drug delivery – Development & demonstration of clinical efficacy. 2nd Chongqing International Clinical Neuroscience Forum & International NeuroDrug Conference, Chongqing, People's Republic of China, 3-20-10, (2010).

Filler AG. Diffusion tensor imaging (DTI) & Magnetic Resonance Neurography (MRN): Origins, History & Clinical Impact. 2nd Chongqing International Clinical Neuroscience Forum & International NeuroDrug Conference, Chongqing, People's Republic of China, 3-20-10, (2010).

Filler AG. Diffusion Tensor Imaging (DTI) & Magnetic Resonance Neurography (MRN): Origins, History, Physical Basis & Clinical Impact. NeuroTalk BIT 1st Annual Congress, Singapore. June 25, 2010.

Filler AG. MRI Neurography, Open MRI Surgery in the Peripheral Nerve Setting & Minimal Access Proximal Plexus Surgery. Association of Extremity Nerve Surgeons. Annual Meeting 2011, Las Vegas Nevada, November 2011

Filler AG. Neuroimaging – MR Neurography, Diffusion Tensor Imaging, and Open MRI for Nerve and Neural Tract Imaging. American Society for Peripheral Nerve – Annual Meeting 2012, Las Vegas, Nevada, January 2012

Filler AG. Diffusion Tensor Imaging, MR Neurography and High Resolution Axonal MRI Techniques for Mapping the Human Connectome & Peripheral Nervous System. International Neuroscience Conference – Omori Medical Center, Toho University, Tokyo, Japan, March 2012

Filler AG. Diffusion Tensor Imaging, MR Neurography and High Resolution Axonal MRI Techniques for Mapping the Human Connectome & Peripheral Nervous System. 周围神经 - 核磁共振成像 - 扩散张量成像技术 International Neuroscience Conference – 2012 Shanghai International Forum on Neuroscience. 8th People's Hospital, Shanghai, Peoples' Republic of China, May 2012

Filler AG. Diffusion Tensor Imaging, MR Neurography and High Resolution Axonal MRI Techniques for Mapping the Human Connectome & Peripheral Nervous System. 周围神经 - 核磁共振成像 - 扩散张量成像技术

International Neuroscience Conference – 3rd Annual World Congress of NeuroTalk, Beijing, People's Republic of China, May 2012

Filler AG. Advances in Diffusion Anisotropy Imaging – New Mathematical Models: The Anti-symmetric Dyadic Tensor Model. Society for Brain Mapping & Therapeutics, 10th Annual World Congress. Baltimore Convention Center, Baltimore, MD. May 12-14, 2013.

Filler AG. Medical and Legal Aspects of Coding and Billing for Peripheral Nerve Surgery. American Society for Peripheral Nerve, Maui, Hawaii, January 12, 2014

Filler AG. Ultrasound and MRI in Nerve Injury. American Society for Peripheral Nerve, Paradise Island, Bahamas, January 24, 2015.

Filler AG. Open MRI Guided Percutaneous Nerve Treatments. Society for Brain Mapping and Therapeutics, Los Angeles Convention Center, Los Angeles, California, March 7, 2015.

Filler AG. Role of the G20+/N20+ Brain Mapping Initiative in the Future of Clinical Neuroscience – Invention and Innovation. Joint Session, Australian Parliament, Canberra, Australia, October 10, 2015

Filler AG. Welcoming Address Society of Brain Mapping 13th Annual Meeting – The Role of Technological Advance and Multi-Disciplinary Collaboration in the Future of Neuroscience. Miami, Florida, April 8, 2016.

Filler AG. Policy, Ethics and the Law: The Role of Daubert/Frye and Markman Type Evidentiary Hearings in the Application Neuroscience in the Courtroom. Society of Brain Mapping & Therapeutics, Miami, Florida, April 8, 2016.

Filler AG. From the Laboratory to the Technology Start-Up: Invention, Patents, and Entrepreneurship. Society of Brain Mapping & Therapeutics, Miami, Florida, April 9, 2016.

Filler AG. Role of the G20+/N20+ Brain Mapping Initiative in the Future of Clinical Neuroscience – Invention and Innovation. United States Congress, Brain Mapping Day, April 20, 2016.

Filler AG. Response to Michel Kliot – Diffusion Tensor Methods and Neurography for Imaging in Peripheral Nerve Management. American Association of Neurological Surgeons, Chicago, IL, May 3, 2016.

Filler AG. Role of the Society for Brain Mapping in the Future of Clinical Neuroscience – Invention & Innovation –通过N20 推进神经科学创新 - N20 Joint Meeting with Chongqing International Neuroscience Forum. Chongqing, People's Republic of China, September 3, 2016.

Filler AG. Diffusion Tensor Imaging & MR Neurography & High Resolution Axonal MRI Techniques for the Evaluation of Peripheral Nerve Entrapments. American Society for Peripheral Nerve, 2017 Annual Meeting, Kona Hawaii, January 13, 2017.

Filler AG. Methodology for Analysis of DTI Images in the Setting of Brain Injury with Memory Loss. Society for Brain Mapping and Therapeutics, 14th Annual Meeting, Los Angeles, CA; April 20, 2017

Filler AG. Surgical Treatment of Peripheral Pain: Lower Extremity Nerve Entrapments. Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, FL; March 14, 2018.

Filler AG. Methodology for Analysis of DTI Images in the Setting of Brain Injury with Photophobia or Vertigo. Society for Brain Mapping and Therapeutics, 15th Annual Meeting, Los Angeles, CA; April 14, 2018

Books

Filler AG. *Apple Thesaurus* (technical text on Apple II microelectronics, lab interfaces, and machine level programming). Datamost, Chatsworth, California. pp. 893. (1984). For information on the book: http://www.amazon.com/Apple-Thesaurus-Aaron-Filler/dp/0881903469

Filler AG. *Do You Really Need Back Surgery: A Surgeon's Guide to Neck and Back Pain and How to Choose Your Treatment*. Oxford University Press. pp 352.(2004).
http://www.amazon.com/You-Really-Need-Back-Surgery/dp/019532708X
Hardcover 1st Edition May 2004
Paperback Edition May 2007
Paperback 2nd Edition January 2013

Filler AG. *The Upright Ape: A New Origin of the Species*. New Page Books, New Jersey, July 2007.
http://www.amazon.com/Upright-Ape-New-Origin-Species/dp/1564149331

Filler AG. *Axial Character Seriation in Mammals*: *An Historical and Morphological Exploration of the Origin, Development, Use, and Current Collapse of the Homology Paradigm*. Brown Walker Press, Boca Raton, FL, April 2007.
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Is there an ethical crisis in spinal surgery?
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7/31/96	*LA Times* - Report touts new nerve imaging technique. Thomas Maugh.
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Federal Circuit Reinstates Brainlab MRI Patent Dispute
https://news.bloomberglaw.com/health-law-and-business/fed-cir-reinstates-brainlab-mri-software-patent-dispute

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Is Harvey Weinstein About to Be Arrested

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(at 33:20 of 44:14)

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Aaron Filler, MD, Ph.D., J.D.
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Professional and Legal Fee Schedule for Aaron G. Filler, MD, Ph.D., J.D.

This is the fee schedule for expert witness and professional fees for service performed by Aaron G. Filler, MD, Ph.D., Director of the Institute for Nerve Medicine. Dr. Filler is board certified in Neurosurgery by the American Board of Neurological Surgery and also by the Board in Surgical Neurology of the Royal Colleges of Surgeons of England, Edinburgh, Glasgow, and Ireland. He has a MD from the University of Chicago and Ph.D. from Harvard University. He has staff privileges at Cedars Sinai, and St. John's Health Center where he performs clinical work. Dr. Filler is director of the Peripheral Nerve Program and director of the Spinal Disorders Program at the Institute for Nerve Medicine. The available fees for services are:

Medical record review, radiological studies, medical report preparation, phone consultation hourly rate ***Rush is completion in 1 week, or less at $2,000.00**)	$1,000.00
Independent Medical and Medical Examinations (with limited medical records) $675.00 ***Note- **$6,000.00** charge applies to no call/no show fees for all IME's	
*Deposition testimony hourly rate (2 hours minimum charge applies)	$1,500.00
***Trial testimony *or binding arbitration testimony** per **half day** (only in CA)	$7,500.00
*Trial testimony or **binding arbitration Full day – and all out of state testimony**	$15,000.00
*Travel for expert witness services hourly rate	$1,000.00 via airplane
*this does not include airfare, hotel stays etc.	$1,500.00 via private car
*Retainer fee for large cases (records over 9 hours, DTI, MRN requests etc.)	$20,000.00

***Review for merit requests**: the minimum fee is **$2,500.00 non-refundable** plus any additional reports, references, exhibits, and lengthy medical records will be charged hourly.

Separately submitted supplemental records for review will be billed for medical record review. Miscellaneous expenses will be charged directly, such as, transcription services, specialized computer software, text or reference books obtained specifically for a given case, and any special media orders (overhead layouts, expanded picture blow-ups, etc.) Estimated expenses arising from airfares (business or first class seats), hotel fees, rental car and parking fees must be paid in advance or included in a retainer. *Cancellations must be made 48 hours advance of the scheduled occurrence or the minimum fee will be applied. ***We follow a strict NO REFUNDS policy without exception.**

***All arbitration testimony and all trial testimony must be requested AT LEAST 30 days in advance of testimony, regardless of any prior issued or predicted trial commencement date.

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Please respond in writing within 5 days if this fee schedule is not acceptable. After accepting the terms of this schedule, ***we adhere to the Code of Civil Procedure Section 2034, which specifies you will provide a copy of these fees to opposing counsel in your declaration.*** Furthermore, deposing counsel will be responsible for all time spent at the deposition, any additional time for counsel who is declaring Dr. Filler, as their expert shall pay deposition transcription review.

To schedule all consultations and depositions, contact me at (310) 314-6410. All correspondence, medical records and advanced fee retainer checks for Dr. Filler should be **sent to the address on this letterhead.** All signed original reports will be sent as soon as we receive payment, or an arrangement has been made in advance. **All charges are due upon scheduling, and payments for trial or deposition testimony are due in advance of scheduled testimony**. ***Any late payments (beyond date of service) are subjected to a 20% (of total balance due) penalty, no exceptions.**

Sincerely,

Jodean Petersen, CSO

Approval Signature,

_____ Date_____

EXHIBIT B

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INITIAL COMPREHENSIVE EVALUATION VIA PHONE

Patient Name: Haysbert, JoAnn
Date of Birth: 09/22/1948
MR#: HJ50647
Date of Injury: 5/23/2018
Date of Service: 09/18/20

MECHANISM OF INJURY: Fall / Blow to the head

HISTORY OF PRESENT ILLNESS: The patient was with her daughter in the car going to dinner. They arrived at the Outback Steakhouse. The patient asked the hostess where the restrooms were. The hostess pointed in the direction of the restrooms. The patient took 1-2 steps forward towards the restroom, all of a sudden, she fell on her left side due to the slippery floor. Her head slammed on the slippery floor. She lost consciousness for a few seconds. When she regained consciousness, she saw people around her. She was unable to move. She was picked up by three people. She was confused and disoriented. The patient did not know where she was. The patient started experiencing immediate pain in her left temple and her head was spinning. She was dizzy and off balance. She had swelling and bruising of her left temple. She also had left wrist/shoulder pain and entire left sided pain and discomfort. The manager of the restaurant asked her if she should call an ambulance, but the patient told the manager to call her daughter who is outside. The patient was brought home with her daughter and went to sleep immediately due to the fear of dying. Her daughter iced her left side of the body for the swelling to go down. The swelling and the symptoms continued and a few days after the fall she went to an urgent care due to ongoing symptoms of headache, dizziness and vertigo. She had an Xray of her left hand done at the urgent care. There was no fracture but was told she had a contusion and a left-hand splint was placed. and was told to follow up with the PCP. She followed up with the PCP who ordered an MRI of the brain. Patient is accompanied by her son.

- **LOC:** positive; loss of consciousness under 2 minutes.
- **Hit head:** positive.
- **Confusion/disorientation:** positive.
- **Dizziness/Balance:** positive.
- **Nausea/Vomiting:** denied.
- **ER visit info:** transported via personal vehicle, same week.
- **Disposition:** discharged with pain management medications and orders to follow-up with PCP.

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Mrs. Haysbert was seen today for her initial comprehensive evaluation.. To assist in the quantification of her symptom severity, the Rivermead Post-Concussion Symptoms Questionnaire tool was utilized in the form of tick boxes in the related sections. Sections wherein the rating exceeds 'No More of a Problem' are considered abnormal. The following was reported by Mrs. Haysbert:

1. **Post-traumatic headaches**: On a scale of 1 to 10, Mrs. Haysbert reports headaches of 7 or 8/10 in intensity. Headaches are recurring 1-2 days per week /minimum of 2 with a duration of minimum of 2 hours to the majority of the day."but minimum of 2 hours. When she can't muster through the day to do anything like sitting up she has to be laying down. When she can't muster through the day due to headaches, then she has to go lie down". . Pain is described as throbbing, pulsating, and/or stabbing/piercing. No stabbing or piercing, Pressure feeling, laying down is the only thing that works. Pain is most frequently located in the crown area. It feels like her whole head. No previous history of headaches/migraines is reported. Associated symptoms include light, sound sensitivity, and dizziness. Alleviating factors include dark, quiet spaces and rest. Light and sound are known exacerbating factors. Some days the headaches can get to a level of intensity scale. She would put a warm rag on her left ear. Ear cover that help with that and has had to compromise her appearance. If she feels air in her ear, she feels dizzy and does not feel stable.

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	☐	■	☐

2. **Sensitivity to light:** Sensitivity to light is endorsed. She has adapted by minimizing her exposure to bright lights in order to prevent an episode of sensitivity to light.

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
■	☐	■	☐	☐

3. **Sensitivity to sound:** Sensitivity to sound is endorsed.

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	☐	☐	■

4. **Vision:** She reports seeing white spots in her vision when she is staring off. Patient must close her eyes for a couple seconds for the dots to go away.

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Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	☐	■	☐

5. **Ringing in the ear(s):** If she sleeps on her side, she feels like something is draining or running.
6. **Dizziness:** Sudden quick movement such as standing up quickly, laying down quickly, or turning her head quickly will cause dizziness. She has adapted to doing things slowly, to prevent the episodes of dizziness.

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	■	☐	☐

7. **Balance:** Sudden quick movements such as standing up quickly, laying down quickly, or turning her head quickly will cause imbalance. She has adapted to doing things slowly, to prevent the episodes of imbalance.
8. **Speech:** Word-finding difficulties are endorsed. The patient has to focus before she can enunciate the words.
9. **Neurocognitive deficits**: Since the incident, Mrs. Haysbert has complained of neurocognitive dysfunction.
    a. **Memory:** She has experienced memory loss. Patient gave an example that one day she was speaking with her relative on the phone and told them she was looking for her phone. They then explained to her that she was speaking on her phone and she realized it was in her hand. Her daughter reported that she has noticed deficits in short term memory. She can't multitask and can only focus on one simple task at a time.

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	■	☐	☐

    b. **Processing Speed/ confusion:**

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	■	☐	☐

    c. **Attention problems:**

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Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	☐	■	☐

10. **Sleep:** Sleep has been unaffected thus far and normal sleep patterns are reported. She only gets up to go to the bathroom. She can rest well at night and still wake up tired.

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
■	☐	☐	☐	☐

11. **Fatigue/Sluggishness:** Fatigue persists and is unabated by rest.

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	☐	■	☐

12. **Nausea and/or weight change:** Nausea and/or emesis is presently denied. Patient has noticed weight loss.

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	■	☐	☐

13. **Tremors:** Bilateral tremors were reported by the patient.
14. **Bodily pain(s)**: Patient reported body pain only in the left ear.
15. **Numbness/ Tingling:** Numbness and/or tingling is reported in her feet.
16. **Crying Spells/Emotional Regulation:** To date, crying spells absent known cause have not occurred and are not problematic. Emotions are self-regulated and reasonably controlled.

Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
■	☐	☐	☐	☐

17. **Frustration and/or Irritability:** An exacerbation of irritability and or an increase in frustration are reported only when she feels tired.

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Not Experienced	No More of a Problem	A Mild Problem	A Moderate Problem	A Severe Problem
☐	☐	■	☐	☐

18. **Depression/Anxiety:** Patient's son reported an heightened anxiety since the fall. To further evaluate for the presence of depression, the PHQ-9 was administered to Mrs. Haysbert; results are as below.

Depression Screening Questionnaire (PHQ-9)

QUESTION	SCORE
Little interest or pleasure in doing things?	Not at all - 0
Feeling down or hopeless?	Not at all - 0
Trouble falling or staying asleep, or sleeping too much?	Several days - 1
Feeling tired or having little energy?	More than half the days - 2
Poor appetite or overeating?	Not at all - 0
Feeling bad about yourself — or that you are a failure or have let yourself or your family down?	Not at all - 0
Trouble concentrating on things, such as reading the newspaper or watching television?	Not at all - 0
Moving or speaking so slowly that other people could have noticed. Or the opposite, being so fidgety or restless than usual?	Not at all - 0
Thoughts that you would be better off dead, or thoughts of hurting yourself in some way?	Not at all - 0
TOTAL SCORE = 0 - 4 = No depression, presently	

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Based upon the above information, Mrs. Haysbert's overall score exceeds the parameters for normal; thus, disability is present. With reasonable medical probability, I believe said disability is a result of the incident described in the History of Present Illness section above and will likely result in residual and/or ongoing issues.

PATIENT REPORTED PAST MEDICAL HISTORY:

1. Hypothyroidism
2. Hypertension

PATIENT REPORTED PAST SURGICAL HISTORY:

1. Gallbladder removal
2. 2 c-sections

PATIENT REPORTED ALLERGIES/SENSITIVITIES:

1. NKDA

MEDICATIONS:

1. Tyrosine 500 MG Oral Capsule

PATIENT REPORTED SOCIAL HISTORY: Mrs. Haysbert lives with her daughter and mother. She is not a tobacco user and has no history of use. She does not use alcohol. She denies illicit drug use.

PATIENT REPORTED OCCUPATION PRIOR TO INJURY: College Administrator

HANDEDNESS: Mrs. Haysbert reports right-hand dominance.

PATIENT REPORTED EDUCATIONAL HISTORY: 20 years

PATIENT REPORTED FAMILY HISTORY:

1. Maternal: Hypertension
2. Paternal: Diabetes

REVIEW OF SYSTEMS:

GENERAL/CONSTITUTIONAL: As recorded in the History of Present Illness section above.

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HEAD, EYES, EARS, NOSE, AND THROAT:

Eyes: The patient reports white spots in her field of vision but denies pain, redness, loss of vision, double or blurred vision, flashing lights, dryness, the feeling that something is in the eye and denies wearing glasses.

Ears, nose, mouth, and throat: The patient reports sensation of fluid discharge from her ear but denies ringing in the ears, loss of hearing, nosebleeds, loss of sense of smell, dry sinuses, sinusitis, post nasal drip, sore tongue, bleeding gums, sores in the mouth, loss of sense of taste and dry mouth.

CARDIOVASCULAR: The patient denies chest pain, irregular heartbeats, sudden changes in heartbeat or palpitations, shortness of breath, difficulty breathing at night, swollen legs or feet, heart murmurs, high blood pressure, cramps in Her legs with walking, pain in her feet or toes at night or varicose veins.

RESPIRATORY: The patient denies chronic dry cough, coughing up blood, coughing up mucus, waking at night coughing or choking, repeated pneumonias, wheezing or night sweats.

GASTROINTESTINAL: The patient denies decreased appetite, nausea, vomiting, vomiting blood or coffee ground material, heartburn, regurgitation, frequent belching, stomach pain relieved by food, yellow jaundice, diarrhea, constipation, gas, blood in the stool, black tarry stools or hemorrhoids.

MUSCULOSKELETAL: As recorded in the History of Present Illness section above.

NEUROLOGIC: As recorded in the History of Present Illness section above.

PSYCHIATRIC: As recorded in the History of Present Illness section above.

ENDOCRINE: The patient denies intolerance to hot or cold temperature, flushing, fingernail changes, increased thirst, increased salt intake or decreased sexual desire.

HEMATOLOGIC/LYMPHATIC: The patient denies anemia, bleeding tendency or clotting tendency.

ALLERGIC/IMMUNOLOGIC: As recorded in the History of Present Illness - Allergies section above.

PHYSICAL EXAM

CENTRAL NERVOUS SYSTEM: Patient is able to ambulate independently.

MENTAL STATUS: The patient is oriented to person, place, problem, and time.

MOOD: She appeared to be frustrated during the interview.

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SPEECH: Word-finding difficulties were noted at times during the history and exam.

Migraine Disability Assessment Tool (MIDAS)

On how many days in the last 3 months did you miss work and/or school because of your headaches? (You were completely unable to go)	0 days; this does not apply to me.
How many days in the last 3 months was your productivity at work and/or school by half or more because of your headaches? (You were able to go, but unable to perform your best; do not include missed days)	1-3 days
On how many days in the last 3 months did you not do household work (cleaning, shopping, child/relative care, cooking, repairs, yard work, etc.) because of your headaches? (You were completely unable to perform the task)	0 days; this does not apply to me.
On how many days in the past 3 months was your productivity in household work reduced by half or more because of your headaches? (You were able to perform the tasks, but unable to perform at your best; do not include missed days)	0 days; this does not apply to me.
On how many days in the past 3 months did you miss family, social and/or leisure activities because of your headaches?	0 days; this does not apply to me.
TOTAL	0-5 = MIDAS Grade I

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MIDAS Scale

MIDAS Grade	Definition	MIDAS Score
I	**Little or No Disability** = Unlikely to affect daily activities and/or independence.	**0-5**
II	**Mild Disability** = Some activities and/or areas of independence are being affected.	**6-10**
III	**Moderate Disability** = More activities and/or areas of independence are being affected significantly.	**11-20**
VI	**Severe Disability** = Activities and/or areas of independence are profoundly affected.	**21+**

Used to record acute disability from headaches, the Migraines Disability Assessment or MIDAS tool was completed today with Mrs. Haysbert. Based upon Her answers as provided in the table above, she is classed as having a MIDAS Grade of I which equates to little or no disability due to headaches.

DIAGNOSIS AND TREATMENT PLAN:

- **POST-TRAUMATIC HEADACHE**

  A post-traumatic headache is defined as one that develops or onsets within the seven days following injury or after regaining consciousness (2; Defrin, 2014). Since the incident on (date), Mrs. Haysbert has suffered from headaches of 7 or 8/10 intensity minimum twice a week. There is a temporal relationship between the incident and the onset of headaches. Headaches are the most frequent complaint following a traumatic brain injury, with a prevalence rate up to 95%. Even at twelve months post-incident, the

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cumulative incidence rate remains above 70%. The majority of those suffering experience daily or weekly onset, with the temple, forehead, neck, back of head, eyes, and vertex the most cited locations of pain (1; International Headache Society).

I recommend the following treatment strategies for Mrs. Haysbert:

- **Vitamin and Herbal Supplementation:** Use of the following as directed to naturally prevent and/or treat headaches/migraines.
  - **Riboflavin (Vitamin B12) 25-400 mg daily –** Helps to reduce frequency after one month of use with continued reduction over following two months. Increases energy and may cause a flushed or warm feeling which passes. Urine may be bright yellow. Costs for this vitamin supplement range from $13.00 – $30.00 per month.
  - **Coenzyme Q10 (CoQ10 or ubiquinol) 150-200 mg twice daily –** Reduces frequency by more than 50% in some people by increasing cell energy in the brain. Commonly used to improve memory and cognition. May increase energy levels. Costs for this supplement range from $27.00 - $55.00 per month.
  - **Magnesium oil topical spray 400-600 md daily/4-5 sprays –** Stimulates blood flow and eases the nervous system for relief from pain. Use close to bedtime as it induces calm and restfulness. Apply to areas where skin is thin, such as the tops of feet to aid in rapid absorption. May cause skin irritation at site resolved after 10-15 minutes. Avoid oral formulation to avoid gastrointestinal side-effects. Taking a bath with Epsom salt may also be of benefit for pain relief throughout the body. Costs for this supplement range from $15.00 – $21.00 per bottle, with one bottle lasting 2-3 months with prescribed use.
  - **Butterbur root extract/ Blatterdock (Petasites hybridus) 50 mg 2-3 times daily –** Works to alleviate spasms and decrease swelling from inflammation in the brain to prevent onset of pain. Do not take when pregnant or attempting to conceive due to the risk of birth defects and liver damage. May cause indigestion, burping and some mild gastrointestinal issues that often ease with continued use. Costs for this herbal supplement range from $19.99 – $41.50 per month; using inferior brands is advised against.

- **PRN Therapy:** Mrs. Haysbert is advised to use Tylenol 500 MG twice a week. The treatment will be evaluated during the follow up.

- **MILD TRAUMATIC BRAIN INJURY WITH NEUROCOGNITIVE DEFICITS**

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Since the incident, Mrs. Haysbert is suffering from neurocognitive deficits. The following areas are affected based on history:

- Memory
- Learning
- Visual/Spatial analysis
- Judgement
- Executive Functions

I am initiating neurorehabilitative exercises, listed below, to improve Her neurocognitive deficits. Mrs. Haysbert is advised to do these neurorehabilitative exercises on a daily basis for a minimum of thirty minutes. She is also advised to keep a log of progress and the number of hours spent engaged in these exercises and bring it with her to each subsequent encounter.

Patient compliance is expected and anticipated.

- **ENVIRONMENTAL ENRICHMENT**

Brain stimulation via physical and social surroundings is known to increase psychological and physiological well-being. When provided with a richer, more stimulating environment, higher rates of synaptogenesis and more complex dendrite arbors are actualized as brain plasticity increases. Essentially, the brain's network grows and strengthens, creating new and/or rebuilding damaged pathways. Environmental enrichment therapies inclusive of physical, cognitive, and social stimulation, have been proven to improve both functional and histological outcomes in those who have suffered from a traumatic brain injury. Mrs. Haysbert has suffered a traumatic brain injury; she would benefit from an enriched environment to aid in the recovery process and overall well-being. Costs to implement these therapeutic changes vary, but an average of $1,500.00 - $5,000.00 annually is appropriate. The following should be implemented in Mrs. Haysbert's home environment to bolster Her recovery and work towards regaining Her cognitive capacity:

- Mirrors, pictures, photographs, books, and interesting things to look at.
- Varied lighting from lava lamps or colored bulbs or neon signs. Christmas lights or those meant for outdoor use will work.
- Items of comfort for relaxing such as rugs, large pillow, bean bags, and/or blankets.
- Chairs and seating of varied types such as rocking chairs, hammocks, etc.
- Calming music or sounds such as those like the ocean or rain. Classical or instrumental music will work well.

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- Pleasant scents; lavender, clary sage, and peppermint have calming or attentional properties.
- Textures of all varieties. Include varied materials from wood to fuzzy pillows.
- Opportunities to exercise, as able. Treadmills, stationary bikes, rowing machines, yoga mats, etc.
- Aesthetically interesting with height variations and surface changes throughout. Ensure that the environment is pleasing and provides opportunity for inquiry and contemplation.
- Opportunities for socializing in a limited or controlled capacity such as volunteering, coffee 'dates', library outings, and mall-walking.
- Creative outlets and the supplies needed for painting, coloring, journaling and the like.
- Cognitively challenging tasks or materials; word-finds or crosswords, newspapers, documentaries, or even local classes will serve well.

- **NEUROREHABILITATIVE EXERCISES**

The following websites and apps may partially restore and/or improve diminished brain functions:

BrainHQ: www.brainhq.com

Happy Neuron: http://www.happy-neuron.com/

Lumosity: https://www.lumosity.com/

Tactus Therapy: https://tactustherapy.com/therappy/

Web Sudoku: https://www.websudoku.com

Lumosity: a free app version of the full site with mobile compatibility. Tailored goal format allows for working on specific areas of concern, including memory, attention, problem solving, processing speed, and cognitive flexibility.

Eidetic: Utilizes spaced repetition to improve memory recall and recognition. Different from many training apps as it utilizes contextual knowledge, thus bolstering the same.

Elevate: After an initial quiz to assess baseline, daily tasks are set for personal goals to improve in areas of weakness. Brief but thorough games exhibit progress via visual maps.

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Fit Brains Trainer: Increasingly complex and challenging tasks build upon each other to expand brain prowess.

Personal Zen: Focuses on anxiety reduction and emotional stability.

Brain Trainer Special: Varied levels for several concepts such as sequencing, calculations and numerical capacity, and memory.

Brain Fitness: Series of memory training exercises to increase focus, problem-solving skills, attention, memory, and overall cognitive capacity. Please note, there is both a free and a paid version.

- **STRESS MANAGEMENT**

  General stress management techniques including meditation, yoga, and massage therapy may be helpful.

  Compensatory strategies that may be useful for Mrs. Haysbert to implement in Her daily living are as follows:

  - Allowing more time to complete tasks to avoid time pressures.
  - Utilizing a day planner/calendar to record appointments and important future tasks.
  - Writing down and organize information to be remembered by carrying a small notebook and pen.
  - Breaking up longer tasks into multiple, shorter tasks and avoid multitasking.
  - Completing tasks in a quiet room, turning off televisions or other distracting sources.
  - If becoming fatigued or losing focus, stop and take a break before returning to the task.

- **DIFFUSION TENSOR IMAGING**

  I am ordering Diffusion Tensor Imaging of Her brain. This test is warranted to evaluate the extent of damage to the white matter tracts following head injury. DTI will allow more precise discovery into the areas damaged, at a level unable to be viewed with traditional MRI or CT; these techniques are not sensitive to detecting diffuse/traumatic axonal injuries (DAI/TAI) - the major brain injuries observed in mTBI (6; Shenton et al, 2012). Symptoms in this patient group are the result of alterations undetectable by traditional CT and/or MRI machinery, thus giving the appearance of a ‘normal' brain. While structural knowledge is important for Mrs. Haysbert’s care, information garnered from

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DTI reveals microscopic damage and is very helpful for the targeted neurocognitive rehabilitation and prognostication. Costs for this sophisticated imaging, absent insurance, range from $12,500.00 - $35,000.00, depending on facility and interpreter expertise.

- **NEUROPSYCHOLOGICAL ASSESSMENT BATTERY**

A Neuropsychological Assessment Battery is a comprehensive test or assessment of the patient's brain functions: attention, processing speed, learning, memory, intelligence, language, sensory acuity, calculation, visuospatial ability, problem solving, judgement, abstract thinking, mood, and temperament. After brain injury, many or all of these cognitive domains may be impaired or affected. Simple screenings, while appropriate for a high-level overview or diagnostically challenging cases, cannot ascertain the depth or breadth of a comprehensive series, specifically in a complex presentation wherein multiple domains appear impacted (7; Kosaka, 2006). This test is warranted and of benefit for Mrs. Haysbert as the information obtained from this testing will be helpful in clinical decision making as well as ongoing and future neurocognitive rehabilitation. Costs for this intensive battery vary by provider expertise and level of credential, with a range of $8,500.00 - $22,000.00 typical for those without insurance.

- **NEUROCOGNITIVE RECOVERY SUPPLEMENTS**

In addition to a diet filled with antioxidant foods, such as berries, carrots, tea, nuts, and a variety of vegetables, and as part of a low saturated fat and reduced refined sugar diet, the following have been shown to be of benefit to those recovering from traumatic brain injury:

- **Vitamin D 3000 IU daily with food** - supports the growth of new brain cells.
- **Fish Oil / Omega 3 Supplements 2-3 grams with food daily** - may improve brain function.
- **Probiotics** - improves gut health and, via the vagus nerve and production of neurotransmitters, brain health, too.
- **Magnesium L Threonate 1-2 grams daily** - boosts brain levels of magnesium and associated benefits for sleep, anxiety, and cognition.
- **Vitamin B12 1000 micrograms daily** - may prevent brain atrophy.
- **Coenzyme Q10 100 mg daily** - protects brain cells from oxidative damage.
- **N-Acetyl Cysteine 150 mg daily -** regulates glutathione and glutamate levels to improve brain health.
- **Zinc 20 mg daily** - aids in brain signal transmission and cell growth.

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- **Alpha Lipoic Acid (ALA) 100 mg daily -** fights free radicals, reduces inflammation, and offers protective benefits.
- **Phosphatidylserine (PS) 100 mg daily -** protects the brain and aids in messaging between cells.
- **Glucoraphanin 15 mg daily -** prevents damage, even delayed, and aids in cognitive restoration.
- **Curcumin (Turmeric) 2 gm daily -** reduces oxidative stress and protects the brain; reduces the overall effects of concussive injury on cognition.

Monthly cost for these supplements varies by quality and retailer. Allotting $100.00 - $300.00 monthly, or $1,200.00 - $3,600.00 annually, should provide for their acquisition.

- **SPEECH ABNORMALITIES**

Brain damage, such as that imparted by trauma, is a major cause of adult-onset communication disorders, specifically aphasia, apraxia, and dysarthria. Diffuse brain injury is known to cause difficulties in comprehension and expression. Damage to the left hemisphere often manifests as aphasiac conditions and dysarthria, while right hemisphere damage accounts for confrontational naming, word fluency, reading, writing and related impairments (8; Bobba et al, 2019). Mrs. Haysbert has been suffering from slurred speech, dysnomia, and word-finding difficulties.

To address this newly onset communication concern, instruction to practice deep breathing exercises, talk slowly to prevent distortions of speech, and slow down the pace of life in general was given. An educational handout on speech dysfunctions after Traumatic Brain Injury, and a handout of speech exercises to help improve speech at home were provided.

Professional intervention for those suffering with communication impairments following brain injury has been proven effective for the majority of patients. With tailored treatment plans, studies show that between 67% - 82.5% of patients showed improvement in language-based capabilities (9; Coelho et al, 1996). To ensure optimal rehabilitative care, I will order an evaluation by a Speech-Language Pathologist and formal speech therapy if the symptoms do not improve with provided home speech exercises. Individualized treatment plans vary in intensity and duration dependent upon patient need. Costs for each treatment session range from $95.00 - $500.00, absent insurance. For a 24-session plan, this equates to $2,280.00 - $12,000.00.

- **ANXIETY DISORDER**

Since the incident, Mrs. Haysbert has been experiencing irritability, fatigability, and anxiety.

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Helpful apps for Mrs. Haysbert:

Happify: Emotional intelligence and training for behavior adaptation; beneficial for adjusting to life after traumatic brain injury.

Positive Activity Jackpot: For those with Post-traumatic Stress Disorder or depression; coping skills and behavioral therapy via apps and a reward system.

ReliefLink: an app created by Dr. Kaslow for those suffering with depression to track and monitor symptoms, response, etc. and find assistance near-by.

CBT Thought Diary: Utilizing the principles behind cognitive behavioral therapy, this app encourages the user to record and monitor feelings, symptoms, and actions. In doing so, reflection can be made to exhibit patterns and aid in behavioral adjustment.

- **POST-TRAUMATIC VERTIGO AND BALANCE DISORDER**

Vestibular dysfunction has been shown to adversely affect processes of attention, and increased demands of attention can worsen the postural sway associated with vestibular disorders. Dysfunction may occur centrally, due to damage to the vestibular nuclei in the brainstem after a head injury, or peripherally, due to damage in the inner ear, such as with Benign Paroxysmal Positional Vertigo (BPPV). After brain injury, vestibular dysfunction ranges from 15%-30% in mild or blast-related TBI, to 100% in those who sustain temporal bone impact or fracture. Presentation includes dizziness, balance deficits, vertigo, visual impairments, and auditory changes (14; AAM PR, 2013).

Mrs. Haysbert endorsed and/or displayed signs/symptoms of vestibular dysfunction during examination. Treatment initiated today includes the following:

- Meditation, omega 3 supplementation, and substituting TV or cell phone watching with stable visual activities, such as reading.
- Vestibular exercises at home (shown below and in handout provided) to improve upon dizziness and imbalance.
- Videonystagmography (VNG) for the diagnosis and rehabilitation of imbalance and dizziness as reported and/or exhibited during examination. Cost for this testing ranges from $350.00 - $1,500.00, absent insurance.

Additional information for balance improvement:

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Increasing strength and flexibility, specifically in the ankle and hip muscles. Activities such as mini-squats, toe-raises, and/or standing leg lifts, when physical functioning allows, are beneficial.

Many practitioners are utilizing Wii and other physically interactive gaming systems to aid in vestibular rehabilitation. This can be a fun, simple way to build and restore damaged systems.

Single leg balancing while maintaining proper posture, initially for thirty seconds can be done first with the eyes open, and then with the eyes closed with improvement. This can be done anywhere where safety is not a concern and when fall risk is minimal. Waiting in line, while cooking, etc.

Practicing standing or walking in different conditions, when capable, will build physical ability and confidence, while giving the visual system a workout, as well.

Online resources available to aid/educate in recovery:

aVOR - A free app tool, useful for those with vestibular ocular reflex system disorders. Benign Positional Paroxysmal Vertigo education is provided.

BalanceandMobility.com - Education regarding causation and treatments available.

Vestibular Rehabilitation Therapy for Patients - Created by Physiotherapist Dr. Jordan Tucker, this video discourses vestibular rehabilitation. https://www.youtube.com/watch?v=pkA75_RWHYA. (Googling his name also works).

VertiGo Exercise - A comprehensive app that provides video instruction of exercises to improve balance. Progress and time spent are built-in for ease of use.

Vertigo Exercises - Visual renderings of causation, along with video demonstrations of relieving exercises, are free in this app.

- **VISUAL DISTURBANCES**

Vision is the most important source of sensory information. Consisting of a sophisticated complex of subsystems, the visual process involves the flow and processing of information to the brain. The visual system is really a relationship of sensory-motor functions, which are controlled and organized in the brain. After TBI, there is frequently a shifting of the visual midline, vitreous hemorrhaging, and macular or retinal

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abnormalities. Common visual changes following injury include blurred vision, double vision, and decreased peripheral vision. Others suffer photophobia, accommodation, eye movement, convergence, pupillary function, and/or visual fields impairments or changes. Studies indicate that up to 60% of TBI patients suffer from some visual dysfunction in at least one eye (15; Armstrong, 2018).

Mrs. Haysbert reports seeing white spots in her vision. She has seen an optometrist and her prescription has not changed, I recommend she follow up with her optometrist on a yearly basis.

Additionally, I have counseled her to wear polarized, rose-tinted glasses at all times for the next three months to aid in the alleviation of photophobia. Costs for these, as non-prescriptive lenses, range from $150.00 - $1,000.00 each.

Recommended retailers of rose-tinted glasses:

- **Felix Gray -** Proprietary blue light filters embedded in polarized and anti-glare lenses. Costs span most budgets and styles are plentiful. Available in prescription and non.
- **Theraspecs** - Designed to aid in migraine and post-concussion relief, these glasses come in multiple styles and price points.

- **HYPERACUSIS**

The efferent system of the ears provides for numerous functions; perhaps most significantly is noise protection and adaptation and frequency selectivity by modification of the outer hair cells. Traumatic brain injury has been shown to significantly reduce or replete the auditory efferent system in up to 87% of those suffering post TBI auditory-related complaints (17; Attias et al, 2005).

Sensitivity to sound and/or loud sounds is reported. I have counseled Mrs. Haysbert regarding avoidance of exposure to such when possible, as well as the use of ear plugs for mitigation of that which is unavoidable. Costs for noise-cancelling ear plugs range from $10.00 - $300.00 and can be purchased from numerous online retailers. Additionally, we have discussed coping mechanisms and tactics to enable her to deal with this concern as it arises.

- **ONGOING/ LONG-TERM CARE NEEDS**

A Life Care Plan (LCP) is a document that outlines a comprehensive future plan for medical requirements for patients with long-term treatment needs. Mrs. Haysbert. is suffering from the concerns discoursed in this document which will likely require ongoing

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and perhaps lifelong care. The checklist below was used to assist in this determination of need.

Life Care Plan Questionnaire

Long-term physical therapy and/or pain management for neck pain?	
Neck surgery performed?	
Neck surgery required or likely so?	
Long-term physical therapy and/or pain management for back pain?	
Back surgery performed?	
Back surgery required or likely so?	
Long-term treatment for traumatic brain injury and related complications?	Y
Long-term physical therapy?	
Long-term occupational therapy?	
Long-term vocational therapy	
Long-term rehabilitation?	
Assistance with bathing, shopping, meal preparation, and/or money management or related tasks?	
Special equipment such as a wheelchair, back brace, and/or prosthesis?	
Long-term mental/behavioral health services for depression, anxiety, PTSD, etc.?	
Home/environmental modifications for safety/independence?	

It is my medical opinion, based upon experience and education, that Mrs. Haysbert has likely suffered a traumatic brain injury secondary to the fall suffered as discoursed in the History of Present Illness section.

Mrs. Haysbert was given handouts on at-home vestibular exercises, neurorehabilitative exercises, speech therapies, stress management, rehabilitation supplements, medication education, and sleep hygiene where pertinent.

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I will follow up with her in 6 months. She will need to complete the Neuropsychological Assessment Battery and diffusion tensor imaging.

Throughout this assessment and examination, supportive techniques inclusive of active listening, validation, and supportive counseling, were utilized to extend understanding, address distress, and encourage healthy coping mechanisms in regard to requisite post-incident adjustments. Communications were entered with the intent of empathetic listening, reflective comments, and to proffer encouragement. Mindfulness and self-awareness were supported, as were healthy choices. Mrs. Haysbert responded well to these interventions and left the office in a seemingly less distressed state.

Thank you for allowing me to participate in Mrs. Haysbert's care after her traumatic brain injury. If I can be of further assistance, please don't hesitate to contact me.

Huma Haider, MD
Medical Director, National Brain Injury Institute
Board Certified in Neurocritical Care through United Council for Neurologic Subspecialties
Certified Life Care Planner (CLCP)
Board Certified in Anesthesiology through American Board of Anesthesiology

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ORDER FORM FOR ADDITIONAL DIAGNOSTIC STUDIES AND SERVICES

Patient Name: Haysbert, JoAnn	**MR#:** HJ50647
Date of Birth: 9/22/48	**Date of Injury:** 5/23/18
Phone Number: (310) 213-7142	**Date of Service:** 9/18/20

Please fax the results of all the imaging studies, testing and consultation reports to NBII at 1-281-942-4504 as soon as they are available.

Diagnosis	ICD-10 Codes	CPT Codes	Recommendation
Imaging			
Traumatic Brain Injury	S06.2	70551	☐ MRI of the Brain and Brain Stem w/out contrast
		70552	☐ MRI of the Brain and Brain Stem with contrast
		70553	☐ MRI of the Brain and Brain Stem with + w/out contrast
		70540	☐ MRI of the Temporal Bone and Internal Auditory Canal w/out Contrast
		73221	☐ MRI of the Left/Right Shoulder w/out contrast
		73223	☐ MRI of the Left/Right Shoulder with and w/out contrast
		72141	☐ MRI of the Cervical Spine w/out contrast
		72156	☐ MRI of the Cervical Spine with and w/out contrast
		72146	☐ MRI of the Thoracic Spine w/out contrast
		72157	☐ MRI of the Thoracic Spine with and w/out contrast
		72148	☐ MRI of the Lumbar Spine w/out contrast
		72158	☐ MRI of the Lumbar Spine with and w/out contrast
		76498	■ Diffusion Tensor Imaging (DTI) of the Brain with measurement of Fractional Anisotropy (FA), Mean Diffusivity (MD), Radial Diffusivity (RD) and Axial Diffusivity (AD) ■ Areas of interest for tractography are: Head Injury, Cognitive Dysfunction, and Psychiatric
			■ DTI of the Brain Imaging review by Specialist Neuroradiologist
		78607	☐ SPECT Scan of the Brain
Tremors/ seizure disorders	G40.909	95951	☐ Electroencephalogram - Routine (72 Hour VEEG with intermittent monitoring for detection of interictal epileptiform abnormalities AND subclinical seizure activity

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			AND/OR clinical events suspected to be seizures)
Neuralgia/ neuritis	M79.2	95855, 95856	☐ Electromyogram Routine
Syncopal Episodes	R55	93880	☐ Bilateral carotid doppler
Dysphagia	R13.10	99205	☐ Gastroenterology/SLP evaluation
Snoring, Insomnia	R06. 83, G47.00	95811	☐ Polysomnography
Diabetes Insipidus	E23.2	80418	☐ Evocative/Suppression testing; Anterior Pituitary Gland Evaluation; complete hormone panel (GH, Prolactin, LH, FSH,TSH, and ACTH)
			☐ Other:
IV Infusion Therapy for Headache Management			
Post-traumatic Headaches (Intractable)	G44.301	96374 & J1110	☐ IV Infusion Therapy with Dihydroergotamine (DHE)
		96374 & J3490	☐ IV Infusion Therapy with Valproic Acid
		96374 & J3490	☐ IV Infusion Therapy with Ketamine
Posttraumatic Headache Procedures			
Post-traumatic Headaches (Intractable), Occipital Neuralgia	G44.301, M54.81	64615	☐ 33 Points Botox Injection
		64450 & 77002	☐ Third Occipital Nerve Block under Fluoroscopic guidance
		64405 & 76942	☐ Greater Occipital Nerve Block under Ultrasound guidance
		64450 & 76942	☐ Lesser Occipital Nerve Block under Ultrasound guidance
Other			
Dysphasia/Aphasia	R47.0	92507	☐ Speech Therapy
Benign Paroxysmal Positional Vertigo/ Disequilibrium	H81.93, H81.10	97112 92547 92548	☐ Vestibular Therapy [Balance and Gait Rehab and Canalith Repositioning for BPPV] ■ Videonystagmography (VNG) ☐ Computerized Dynamic Posturography (CDP)
Depression, Anxiety, PTSD	F32.9, F41.9, F43.1	90837 90791	☐ Transcranial Magnetic Stimulation (TMS) ☐ Cognitive Behavioral Therapy (CBT) ☐ Psychiatric evaluation
Traumatic Brain Injury w/ Neurocognitive Deficits	G31.84	97127 96136, 96137	☐ Neurocognitive Rehabilitation (Outpatient) ☐ Neuropsychological Evaluation
Bruxism	G47.63, F45.8	D9940	☐ Evaluation for Occlusal Guard by a Dental Professional
Hearing Loss	H91.90	92551, 92552	☐ Audiology
Blurred/Impaired Vision	H53.8, H54.7	92102	☐ Optometry/Neuro-Ophthalmology

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Neck Pain, Lower Back Pain	M54.2, M54.5	97162, 97166	☐ Physical Therapy/ Occupational Therapy
Shoulder Muscle Tear	M75.102	99205	☐ Consultation with an Orthopedic Surgeon
Cervical Spine Disc Herniation, Thoracic Spine Disc Herniation	M50.10, M51.24	99205	☐ Consultation with Spine Surgeon
Pain, acute or chronic, due to trauma	G89.11, G89.21	99205	☐ Evaluation by Pain Management Specialist

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Preferred Ancillary Service Providers - Los Angeles, CA

Provider	PoC with whom to coordinate referral and arrange lien
National Brain Injury Institute Services Offered • Diffusion Tensor Imaging Scan of the Brain (DTI) • Neuropsychological Assessment Battery (NAB) • Computerized Dynamic Posturography (CDP) • VIdeonystagmography (VNG) • Certified Life Care Plans (CLCP)	Juan Hernandez jhernandez@nationalbii.com P:281-769-3906
Med Trak VNG Services Offered • Videonystagmography (VNG)	Scott Auerbach Scott@medtrakvng.com P:347-742-4100
Dilanchian & Associates Chiropractic Locations Services Offered • Chiropractic Adjustments • Electronic Muscle Stimulation • Ultrasound • Mechanical Massage • Infrared Heat Therapy • Paraffin Wax	Referral Form Mel Dilanchian mel@DrDilanchian.com P:818-247-1331
Interventional Pain Management Center, Stem Cell Regenerative Therapy Services Offered • Spinal Cord Stimulation • Neck & Back Pain • Radiofrequency Ablation • Herniated Disc and Spinal Stenosis • Platelet Rich Plasma (PRP) • Stem Cell and Regenerative Cell Therapy	Jessica Ramirez aurorapainclinic@gmail.com P: 877-433-7246
A Medical Expert Network 212 26th Street, Ste. #160 Santa Monica, CA 90402 Services Offered • Videonystagmography (VNG)	info@amenexpert.com P: 888-419-2775 Fax: 866-864-4566
Rest Analysis Services Offered • EEG/ERP	Dr. Donna Meeks drdonnameeks@gmail.com P:661-209-2782
Laser MD Pain Relief Services Offered • Laser pain management	Dr. Harold Kraft help@lasermdpainrelief.com P: 213-550-5600 Fax: 213-325-6425

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Precise Imaging Locations Services Offered • MRI • X-Ray • CT • PET Scan	Referral Form Mike Rashidi mike@precisemri.com P: 800-558-2223 ext. 102 Fax: 888-715-7001
Los Angeles Brain Science Project Locations Services Offered • General Neurological Care • EDMS • EEGS • Refers MRIs to preferred facility	Sara Ricker sricker@losangelesbrain.com P: 818-617-9509 Fax: 310-957-2346
AAT.L.C. HealthCare, Inc. Services Offered • Nurse • Therapy • Physical Therapy • Homecare Givers	Carolene Bookman carolene@aaatlc.com Todd Adams, D.C. todd@aaatlc.com Margie M. Meza margie@aaatlc.com P: 310-271-1887
MEDNET Medical Services, Inc. Services Offered • Sleep Study • Psychotherapy • Family Therapy • Couple Therapy • Med-Legal Evaluation	Michael Aghvami maghvami@mednetcenters.com P: 818-646-0118
Studio City Spine Center Services Offered • Chiropractic Adjustments	Dr. Ruben G. Chlydran Dr.Chldryan@gmail.com P: 818-255-6526

Please forward any reports for services obtained to info@nationalbii.com so that we may incorporate them into our care of the patient. Thank you.

- The NBII Team

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DIFFUSION TENSOR IMAGING

Patient Name: Haysbert, JoAnn
Date of Birth: 09/22/1948
MR#: HJ50647
Date of Injury: 05/23/2018
Date of Study: 09/18/2020
Requesting Physician: Huma Haider, MD
Site Name and Equipment: Medical Imaging of Southern California, Beverly Hills, CA, 3T, Siemens MRI Scanner

INDICATION: This is a 71-year-old woman who on 05/23/2018 was at a restaurant and when she got up from the table, she slipped and fell on what was described as a slippery floor, impacting her head, with some loss of consciousness and the onset of neurologic symptoms, a number of which have persisted.

STUDY: MRI OF THE BRAIN WITH DIFFUSION TENSOR IMAGING

METHODS: These images demonstrate the detailed anatomy of the brain with supplemental analysis through evaluation of fractional anisotropy and diffusion tensor imaging tractography.

The report is provided in
three segments:

1) Tractography from diffusion tensor imaging (DTI)
2) Fractional Anisotropy analysis from diffusion tensor imaging (DTI)
3) General brain imaging with Susceptibility Weighted Imaging (SWI).

Diffusion tensor imaging (DTI) was obtained in a 3-Tesla Siemens imager using thirty directions of diffusion. The fractional anisotropy and tractographic analysis were processed using FDA approved NORDIC Brain Ex clinical workstation software.

DTI TRACTOGRAPHY REPORT AND ANALYSIS:

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TRACTOGRAPHI
C REPORT:

TECHNICAL: These images were obtained with 30 directions of diffusion gradients on a **Siemens 3-Tesla imager**, there are no significant artifacts impairing image interpretation.

The tractographic analysis is carried out by adjusting the fractional anisotropy threshold as well as the degrees of angulation and tractographic segment length as inputs to the FACT tractographic algorithm for tract analysis in order to identify areas of tractographic deficits and continuities.

Loss of tractographic continuity does not demonstrate a complete loss of connections; rather it is the effect of a decrease of coherently directed fractional anisotropy along the course of a tract. Such a drop off halts the progress of the tractographic reconstruction process so that the remainder of the tract does not appear. These have clinical significance because they represent clinically relevant interference with transmission of neurological information from one part of the brain to another. The presence of such drop off point does not represent complete loss or obstruction, but rather detects the presence of a relative drop off that affects the normal function of a major tract.

FINDINGS: The tractographic analysis reveals losses bilaterally in the frontal lobe with expected effects of impairment of multistep planning, map-based planning and emotional control release functions. There are losses additionally appreciated bilaterally in the supra-callosal cingulum which would have the expected effects of increased anxiety and depression. Losses are appreciated in the left parietal lobe in the area of the angular gyrus and in this right-handed individual this would be expected to have the effects of impairment of word finding and some effects on calculation ability. Losses are seen bilaterally in the arcuate fasciculus. The right side arcuate fasciculus losses can affect the prosody or flow of speech and the left arcuate fasciculus losses can affect a variety of more complex speech functions. Note is additionally made of some losses in the mid-portion of the corpus callosum which can suggest some degree of diffuse axonal injury with general cognitive impairment. There are losses appreciated in the pillars of the fornix on the left side and the crus of the fornix on the right side which can have effects on impairing new memory formation. The right parietal lobe is generally normal in appearance. The temporal lobes are generally normal in appearance, right and left. The right and left occipital lobes are

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generally normal in appearance. No abnormalities are appreciated in the area of the middle cerebellar peduncle, right or left side.

Three dimensional 360 degree rotations are provided in the DICOM data set for visualization of these findings.

TRACTOGRAPHY IMPRESSION: Bilateral losses in the frontal lobes affecting particularly the area of the superior, middle and inferior frontal gyri with expected effects on multistep planning, map-based planning and emotional control release functions. There are losses on the left side in the parietal lobe extending into the area of the angular gyrus with expected effects of impairment of word finding and calculation ability. Losses are appreciated bilaterally in the arcuate fasciculus which would be expected to have effects on conversation such as impairment of prosody or flow of speech as to the right side and more complex variety of conversational speech impairments associated with the left side abnormality. There are losses in the area of the mid-portion of the corpus callosum which is indicative of diffuse axonal injury that may affect cognition more generally. There are losses bilaterally in the supra-callosal cingulum with expected effects of increased anxiety and depression. Losses appreciated in the right crus of the fornix and the left pillar of the fornix on detailed formal tractographic evaluation of the fornix and the limbic system reveal abnormalities which will have the expected effects of impairment of new memory formation. Overall, these findings demonstrate multiple abnormalities with expected effects on cognition, emotional behavior and neurologic functions as identified above. The degree of injury appreciated in the images would be expected to result in clinically significant symptoms. The locations and types of injury are consistent with the mechanics of the trauma as described.

FRACTIONAL ANISOTROPY (FA) REPORT AND ANALYSIS:

These images demonstrate the analytical level information concerning brain structure. The fractional anisotropy measurements are objective assessments of brain regions either obtained for standardization measurements or comparing right and left structures. Data is obtained with 30 directions of diffusion in a 3Tesla **Siemens scanner.**

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VOLUMES OF INTEREST (VOI's): In all cases the volumes of interest (VOI's) that were measured are selected areas, entirely in white matter, of the highest intensity for fractional anisotropy as visualized by a fractional anisotropy overlay method. This method results in measurements of highest levels of fractional anisotropy in an anatomically recognizable brain white matter structure in the regions assessed. Data is provided with the size in cubic millimeters of the VOI, as well as the mean, minimum and maximum of FA values in the VOI with standard deviation calculated. Histograms are provided for each VOI that can reveal any unwanted bimodal distribution. Image captures were obtained demonstrating the location and size of each VOI measured as shown in three imaging planes. Further, the histograms provided show the variability of anisotropy among the voxels measured within each VOI. Significant right/left asymmetries in fractional anisotropy are considered clinically relevant on a prima facie basis. For a given level of anisotropy, a smaller size of a VOI – that is otherwise bilaterally symmetric – will reveal a reduced volume of that tract and this size difference also has clinical significance in many situations.

CLINICAL BASIS (Scientific Model): This fractional anisotropy analysis is carried out according to the method and clinical concept of Brander et al: *Diffusion Tensor Imaging of the Brain in a Healthy Adult Population: Normative Values and Measurement Reproducibility at 3 T and 1.5 T*; Acta Radiologica (2010), Volume 7 pages 800-807, in which VOI's are measured for fractional anisotropy using the Splenium of the Corpus Callosum as a baseline measure to be compared with other individuals as well as an internal references to assess relative FA drop off in other brain regions. The data provided in articles such as the Brander study show expected relative fractional anisotropy measures using the Splenium of the Corpus Callosum as the standard, because this will tend to have the highest fractional anisotropy in the brain and can therefore provide a cross reference to other imaging subjects as well as provide a basis for assessing the degree of drop-off present to any given brain region associated in a relative to a comparative, standardized set of findings from large numbers of normal individuals.

There are more than 15,000 high quality peer reviewed publications showing the utility and clinical relevance of DTI and only one or two publications written by professional defense experts that attempt to formally raise concerns about utility (e.g. *Wintermark, et*

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al (2015), Imaging Evidence and Recommendations for Traumatic Brain Injury: Advanced Neuro- and Neurovascular Imaging Techniques AJNR 36:E1-E11) mostly by pointing out that the vast majority of publications use groups of patients (usually required for all published studies) but that legal cases focus on individuals. However, Wintermark provided an unreliable biased assessment because he improperly omitted excellent studies showing high clinical and legal utility of DTI data for individuals such as *Yuh et al (2014): Diffusion Tensor Imaging for Outcome Prediction in Mild Traumatic Brain*

Injury: A TRACK-TBI Study, Journal of Neurotrauma 31:1457-1477; and *Mustafi et al: Acute White-Matter Abnormalities in Sports-Related Concussion: A Diffusion Tensor Imaging Study from the NCAA-DoD CARE Consortium*. Journal of Neurotrauma, ePub 2017.

CLINICAL BASIS (Report Methodology): By viewing an FA overlay on a high resolution, co-registered MP-RAGE three dimensional brain MRI acquisitions, asymmetries and drop-offs can be identified as to identified anatomical brain structures. For these VOI locations, the mean and standard deviation data can be used to assess the statistical significance of any different in overall FA for a VOI compared with either the FA of the Splenium or with the FA of a similar VOI on the opposite side. Only a single combined FA for right and left Fornix is obtained in some cases because of its small size if it is not possible to obtain usable measures for each side.

SCIENTIFIC BASIS: Fractional anisotropy is expressed as fraction between 0 and 1 and reflects the degree to which fibers within a given voxels or group of voxels measured and assessed in the volume of interest, tend to share a coherent single direction and high health with good quality within the measured volume. A loss of fractional anisotropy is correlated with a decrease of function or transmission to a given white matter tract area. When two different tracts pass through each other having different directions, incorrectly low FA levels can be obtained, but this is controlled for here by selecting well recognized white matter brain structures that have a coherent single direction. Additionally, matching the same structure right to left corrects for this

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directional diversity issue. As for comparisons with the Splenium FA values, the data from the Brander et al article provides a useful well documented clinical framework that corrects for the directional diversity issue.

RESULTS (STANDARDIZATION): The splenium of the corpus callosum has a fractional anisotropy of 0.78, which is well within normal range, and this is used as a baseline for comparison with other individuals and for comparison with other structures for this individual's brain.

RESULTS (FINDINGS): The splenium is commented on above. The genu of the corpus callosum is at 0.81, also within the normal range. The right corona radiata, measured at the genu of the internal capsule is at 0.68, within the normal range, and left corona radiata measured at the level of the internal capsule is at 0.76, also within the normal range. The right to left difference is not statistically significant. On the right side at the stem of the white matter for the superior, middle and inferior frontal gyri, the fractional anisotropy is 0.22, which is quite low. The left side measures at 0.32. The right to left difference is not quite statistically significant. The overall level is quite low however and suggestive of problems which will result in impairment of multistep planning, map-based planning and emotional control release functions. The right parietal lobe measures at 0.46, just within the normal range. The left parietal lobe is at 0.34. The right to left difference is statistically significant and is essentially in the area of the angular gyrus, which in this right-handed individual would be expected to have effects of impairment of word finding and calculation ability. The right occipital lobe is at 0.52. The left occipital lobe measures at 0.36, which is low. The right to left difference here is statistically significant. This might be expected to result in some impairment of processing of visual information arising on the right side of the body. The right temporal lobe is at 0.48 and within normal range. The left temporal lobe is at 0.41, just within the normal range for someone of this age, despite the relatively good numbers for the splenium of the corpus callosum. The right uncinate fasciculus measures at 0.54 and the left uncinate fasciculus measures at 0.33. The right to left difference is not statistically significant because of variability of the left side. The right arcuate fasciculus is at 0.28 and the left arcuate fasciculus is at 0.28. These are both low numbers and would be consistent with problems with conversational speech affecting primarily prosody or flow of speech as to the right side and more general conversational speech functions as to the left side in this right-handed individual. The right hippocampal cingulum is at 0.32, and that is moderately low. The left hippocampal cingulum is at 0.29, which is also moderately low. The right to left difference is not statistically significant. Overall, these are moderately low numbers and may reflect problems with attention. The right fimbria of the fornix and stria terminalis is at 0.60, within the normal range. The left fimbria of the fornix and stria terminalis is at 0.49, within the normal range. The anterior fornix in the area of the pillars is at 0.37. The posterior fornix at the level of the crus is at 0.24. Particularly for the posterior

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fornix this is a low number and the anterior to posterior difference is statistically significant and this would be expected to have effects of impairment of new memory formation. The right middle cerebellar peduncle measures at 0.60 and the left middle cerebellar peduncle is at 0.77. This is a low number for the right middle cerebellar peduncle and the right to left difference is statistically significant. Impairment for the right middle cerebellar peduncle would be expected to have the effects of some vertigo, problems with balance, sometimes some auditory processing and smooth pursuit motions problems. The right medial lemniscus is at 0.52. The left medial lemniscus is at 0.42. The right to left difference is not statistically significant. Overall, these are moderately low numbers. The medial lemniscus is a general sensory tract and may reflect impairment in the mid-brain area because of this location of abnormality. These would impact functions such as eye movement, convergence, and the underlying symptoms such as photophobia.

<u>FRACTIONAL ANISOTROPY IMPRESSION</u>: Low numbers for the frontal lobe bilaterally, at the stem of the white matter base for the superior, middle and inferior frontal gyri with expected effects of impairment as to multistep planning, map-based planning and emotional control release functions. Low number for the left parietal lobe in the area of the angular gyrus with expected effects on this right-handed individual for problems with word finding and calculation ability. Losses in the left occipital lobe which impair processing of visual information arising on the right side of the body. Low numbers for the uncinate fasciculus and inferior frontal occipital fasciculus may reflect impairments such as flattening of affect and loss of emotional drive and impairment of some visual recognition phenomena. However, given the variability, it is not clearly statistically significant as to the contralateral side. The arcuate fasciculus bilaterally with low numbers which will affect aspects of conversational speech. Low numbers for the hippocampal cingulum which will have expected effects on attention. Low numbers for the posterior fornix with expected problems with new memory formation. Low number for the right middle cerebellar peduncle with expected effects such as vertigo, balance problems, impairment of smooth pursuit motions and some types of auditory processing. A somewhat low number for the left medial lemniscus which would expect to be associated with some midbrain function impairment such as problems with eye movement, pupillary accommodation, convergence and may be associated with symptoms such as photophobia. Overall, these findings demonstrate multiple appearance with effects on cognition, emotional behavior and neurologic functions. The degree of abnormality appreciated in the images would be consistent with clinically significant symptoms. The locations and types of injury are consistent with the mechanics of the trauma as described.

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FA Measurements and Statistical Calculations:

These images demonstrate data collection and analysis in addition to the measured VOI's for the medial lemniscus and the full data set. A full set of VOI measures appears in the image DICOM data file.

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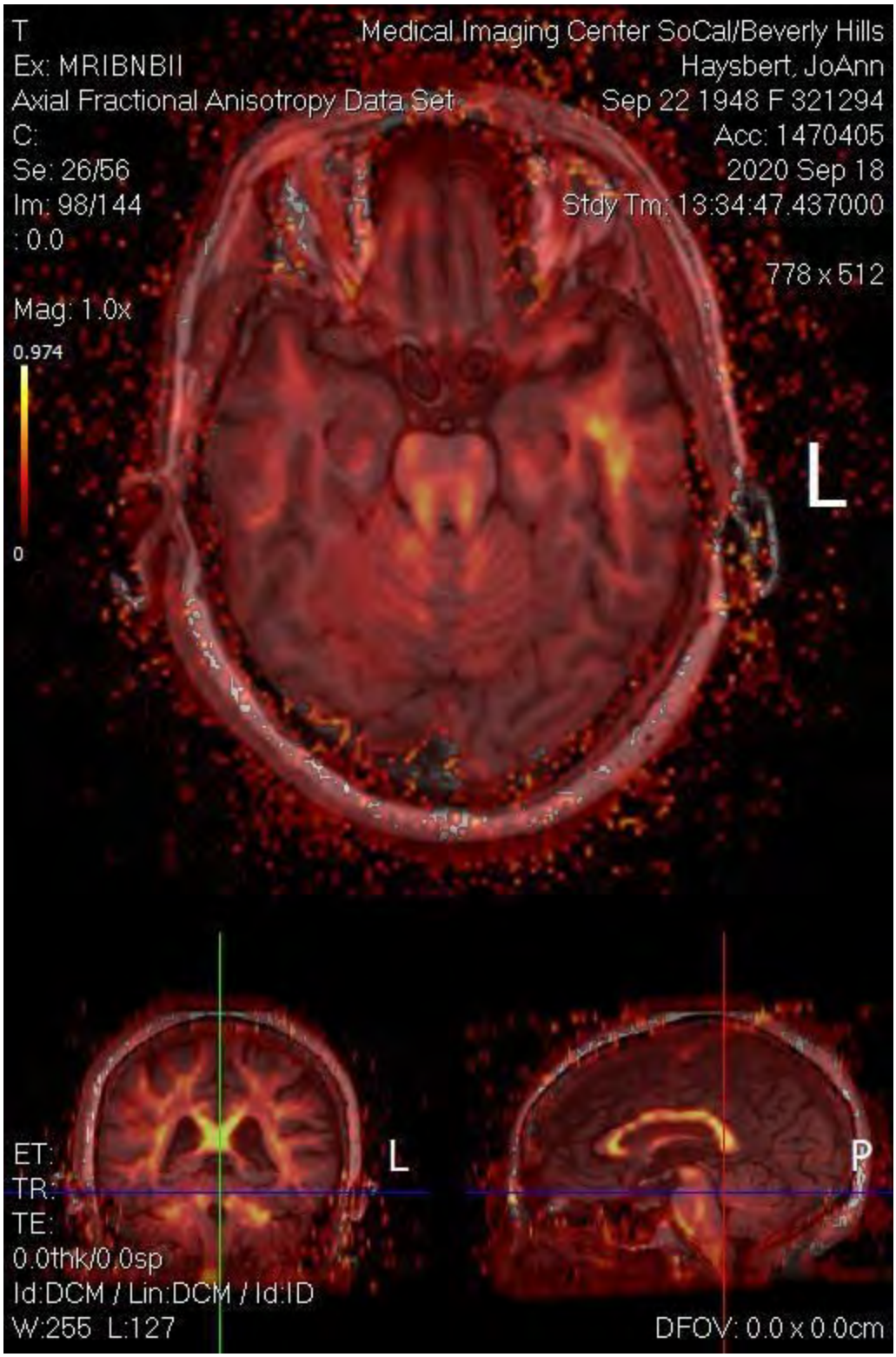

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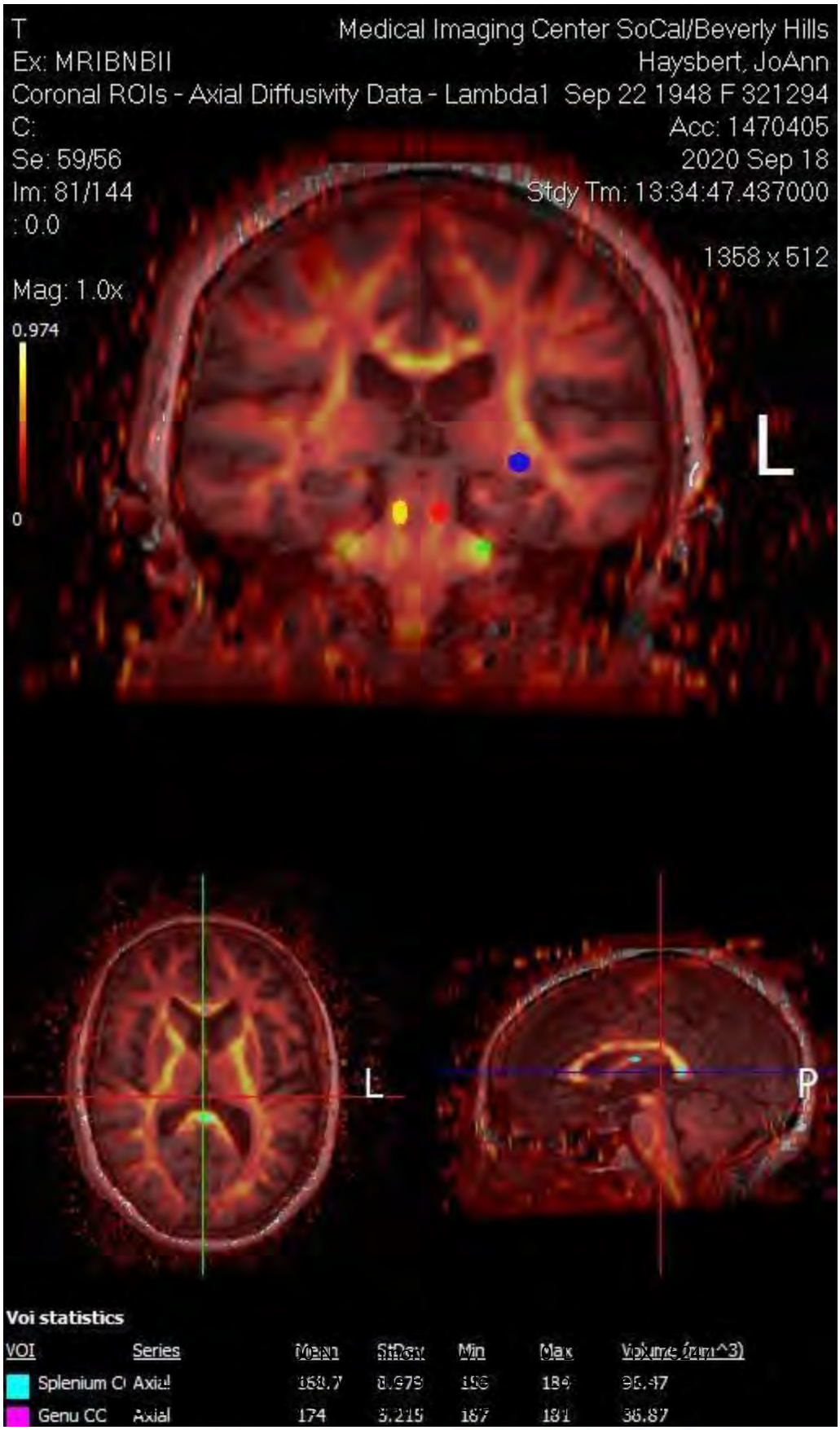

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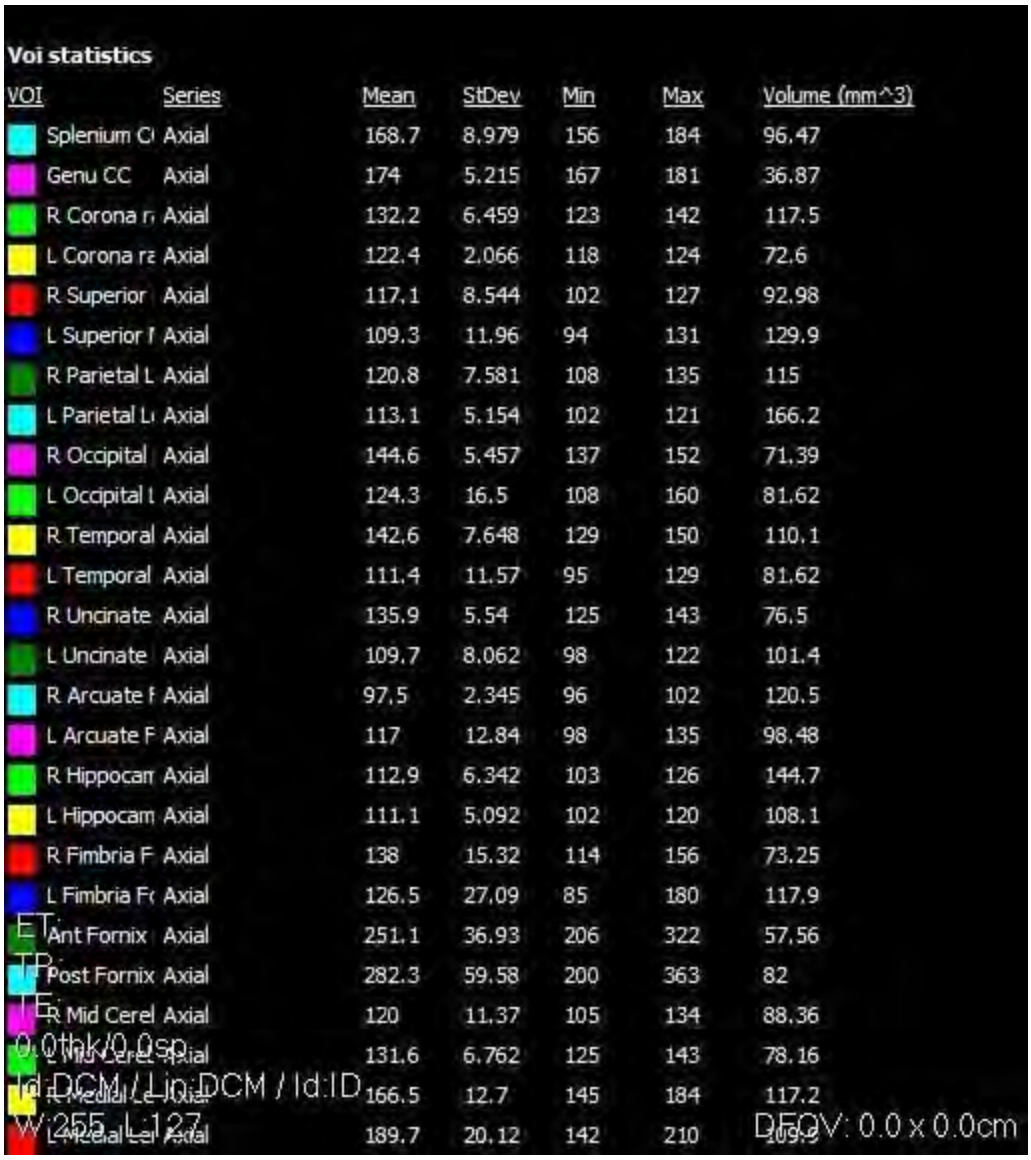

Voi statistics

VOI	Series	Mean	StDev	Min	Max	Volume (mm^3)
Splenium C	Axial	168.7	8.979	156	184	96.47
Genu CC	Axial	174	5.215	167	181	36.87
R Corona r	Axial	132.2	6.459	123	142	117.5
L Corona ra	Axial	122.4	2.066	118	124	72.6
R Superior	Axial	117.1	8.544	102	127	92.98
L Superior f	Axial	109.3	11.96	94	131	129.9
R Parietal L	Axial	120.8	7.581	108	135	115
L Parietal L	Axial	113.1	5.154	102	121	166.2
R Occipital	Axial	144.6	5.457	137	152	71.39
L Occipital l	Axial	124.3	16.5	108	160	81.62
R Temporal	Axial	142.6	7.648	129	150	110.1
L Temporal	Axial	111.4	11.57	95	129	81.62
R Uncinate	Axial	135.9	5.54	125	143	76.5
L Uncinate	Axial	109.7	8.062	98	122	101.4
R Arcuate f	Axial	97.5	2.345	96	102	120.5
L Arcuate F	Axial	117	12.84	98	135	98.48
R Hippocam	Axial	112.9	6.342	103	126	144.7
L Hippocam	Axial	111.1	5.092	102	120	108.1
R Fimbria F	Axial	138	15.32	114	156	73.25
L Fimbria Fc	Axial	126.5	27.09	85	180	117.9
Ant Fornix	Axial	251.1	36.93	206	322	57.56
Post Fornix	Axial	282.3	59.58	200	363	82
R Mid Cerel	Axial	120	11.37	105	134	88.36
L Mid Cerel	Axial	131.6	6.762	125	143	78.16
L Medial Ce	Axial	166.5	12.7	145	184	117.2
L Lateral Cer	Axial	189.7	20.12	142	210	109.2

ET:
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Id:DCM / Un:DCM / Id:ID
W:255 L:127
DFOV: 0.0 x 0.0cm

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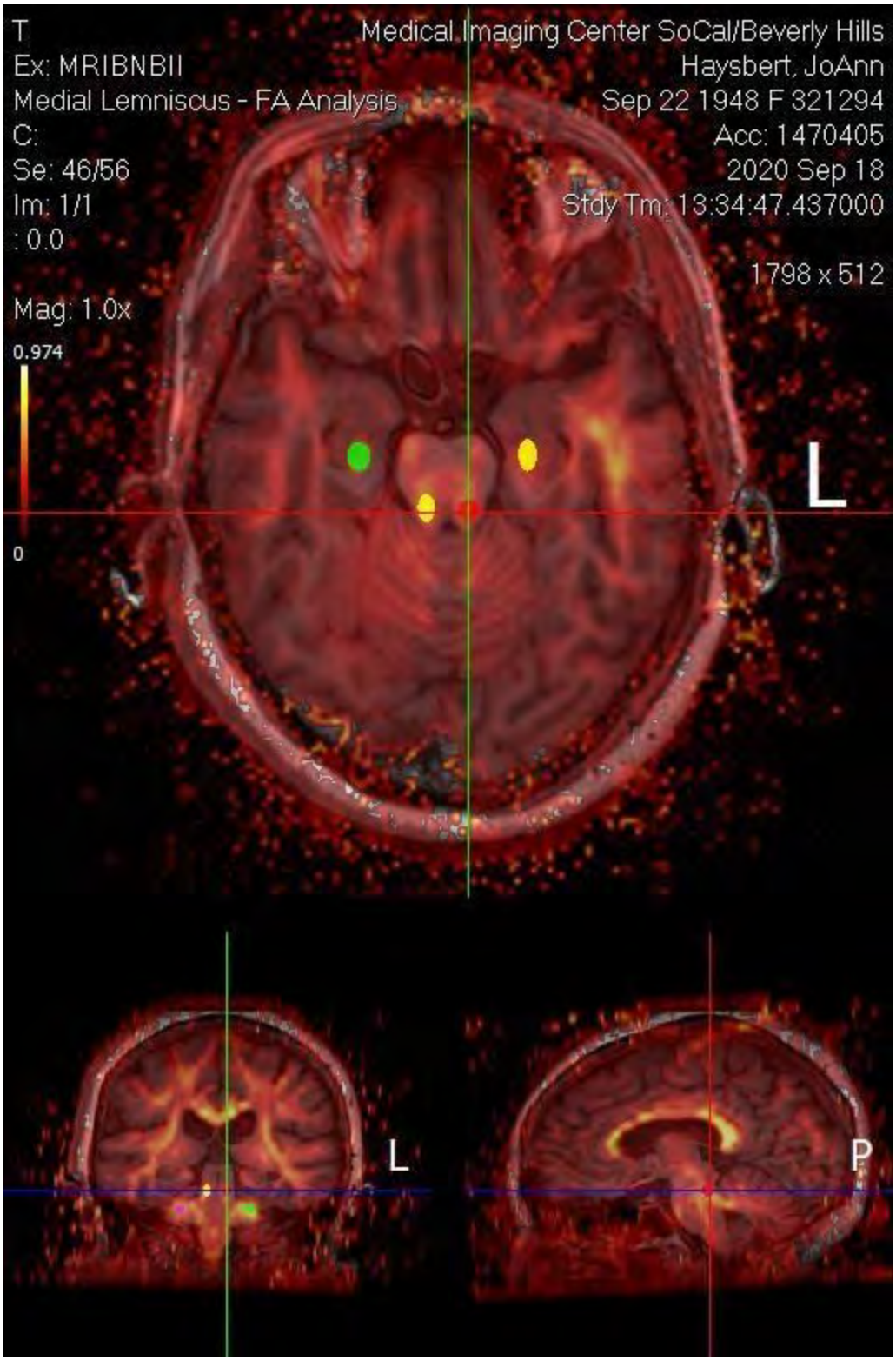

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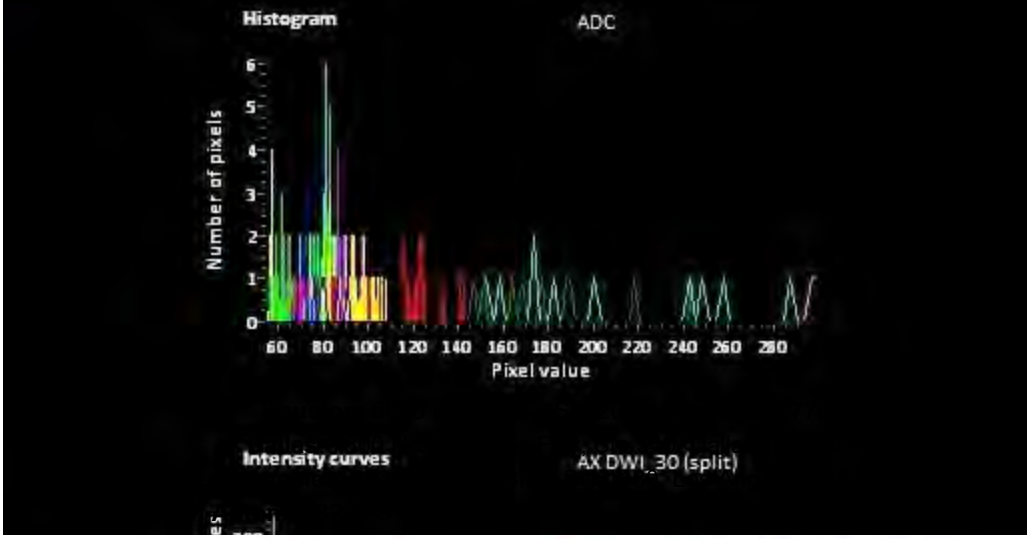
Voi statistics

VOI	Series	Mean	StDev	Min	Max	Volume (mm^3)
Splenium C	FA	0.7844	0.07784	0.664	0.923	96.47
Genu CC	FA	0.8063	0.02488	0.775	0.836	36.87
R Corona r	FA	0.6756	0.08229	0.519	0.796	117.5
L Corona ra	FA	0.7593	0.02573	0.709	0.79	72.6
R Superior	FA	0.2178	0.02771	0.168	0.261	92.98
L Superior F	FA	0.3181	0.07297	0.147	0.397	129.9
R Parietal L	FA	0.4594	0.05188	0.353	0.52	115
L Parietal L	FA	0.3395	0.05547	0.232	0.41	166.2
R Occipital	FA	0.5223	0.04209	0.453	0.575	71.39
L Occipital L	FA	0.3576	0.06931	0.256	0.49	81.62
R Temporal	FA	0.477	0.01883	0.444	0.507	110.1
L Temporal	FA	0.414	0.148	0.213	0.599	81.62
R Uncinate	FA	0.5383	0.04432	0.471	0.618	76.5
L Uncinate	FA	0.3296	0.1252	0.14	0.477	101.4
R Arcuate F	FA	0.284	0.06804	0.185	0.365	120.5
L Arcuate F	FA	0.2761	0.03146	0.207	0.315	98.48
R Hippocam	FA	0.3214	0.0713	0.209	0.424	144.7
L Hippocam	FA	0.2888	0.072	0.148	0.394	108.1
R Fimbria F	FA	0.6039	0.04842	0.527	0.659	73.25
L Fimbria F	FA	0.4939	0.07688	0.35	0.595	117.9
Ant Fornix	FA	0.3707	0.07296	0.276	0.476	57.56
Post Fornix	FA	0.2384	0.04371	0.177	0.294	82
R Mid Cerel	FA	0.6042	0.05796	0.524	0.67	88.36
L Mid Cerel	FA	0.7738	0.03675	0.717	0.819	78.16
R Medial Le	FA	0.5238	0.07205	0.368	0.61	117.2
L Medial Le	FA	0.4193	0.105	0.195	0.537	109.9



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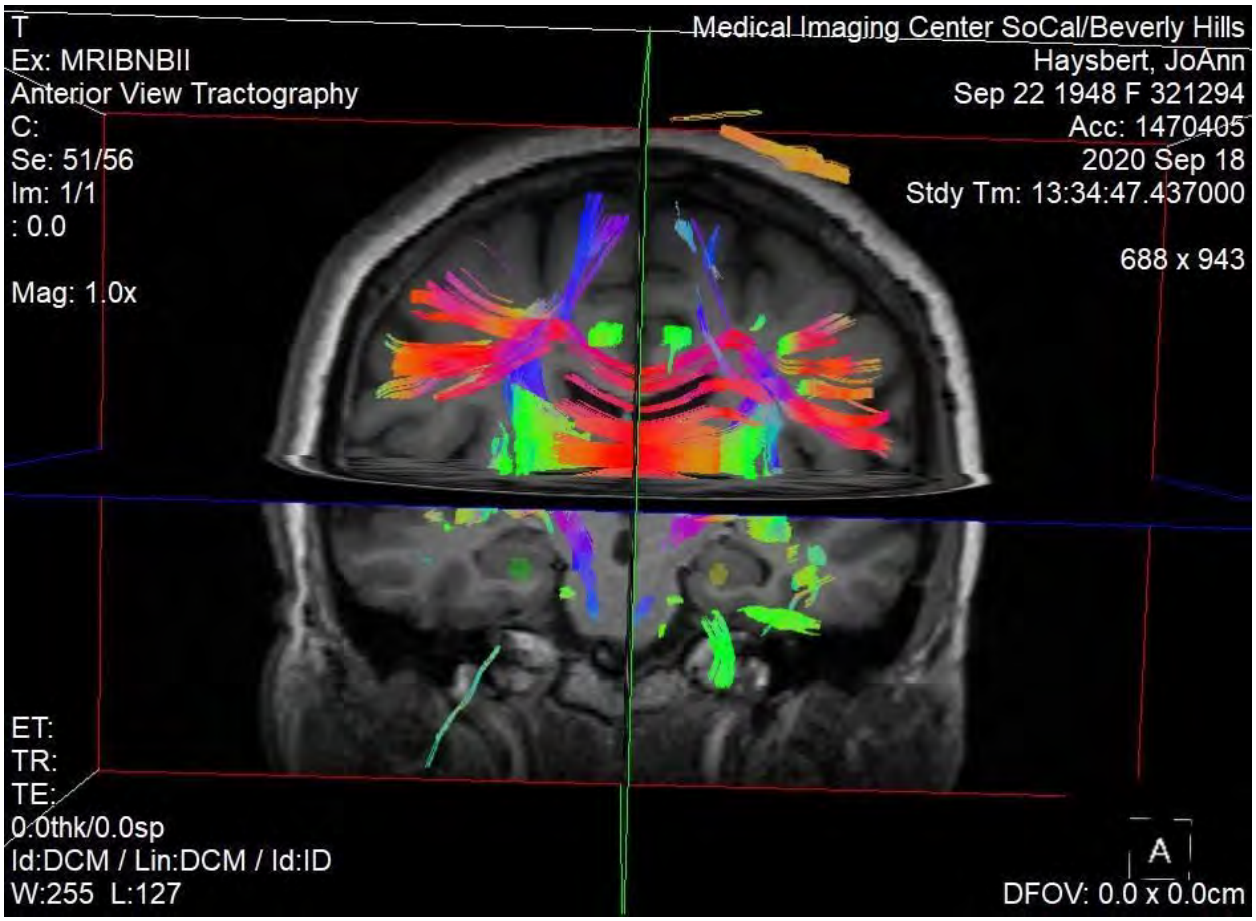

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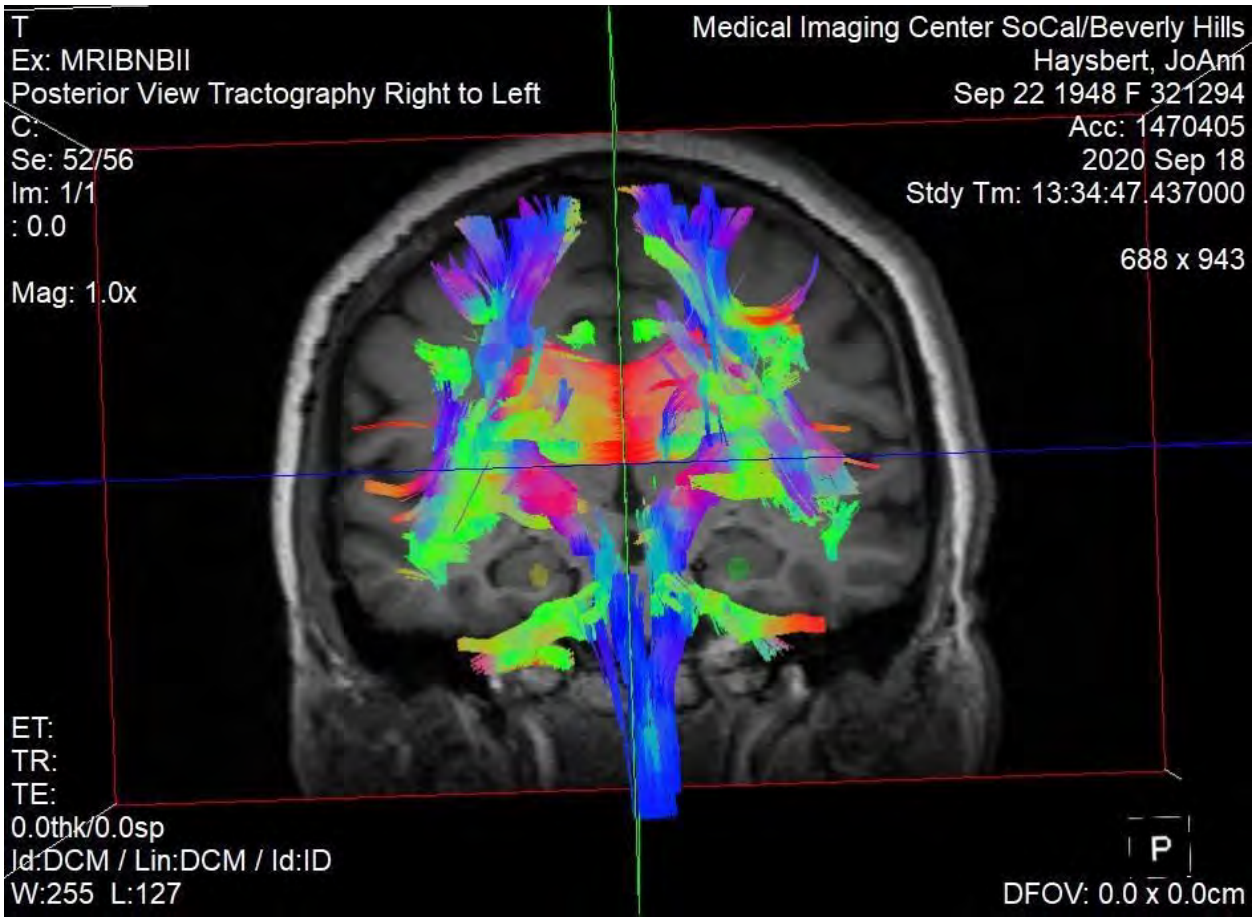

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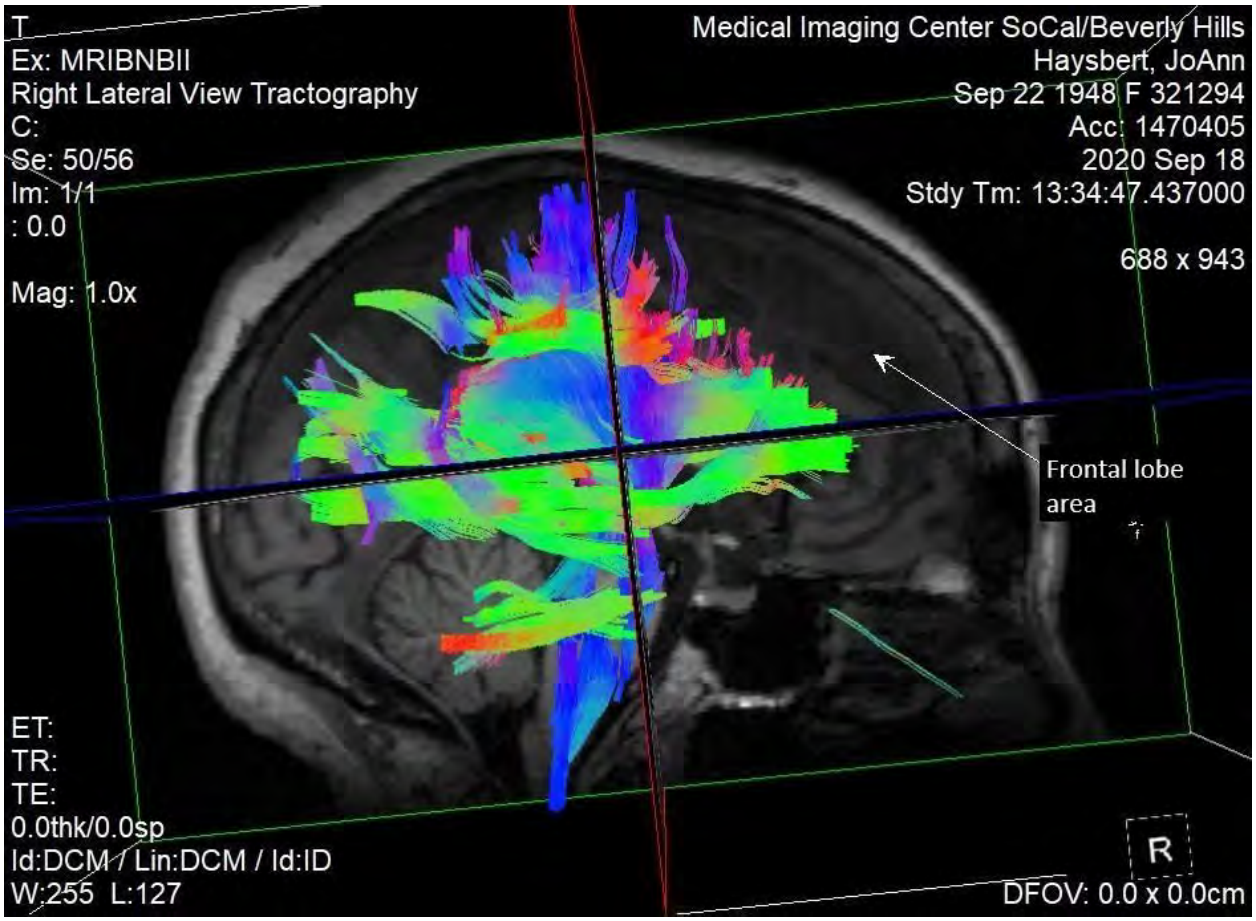

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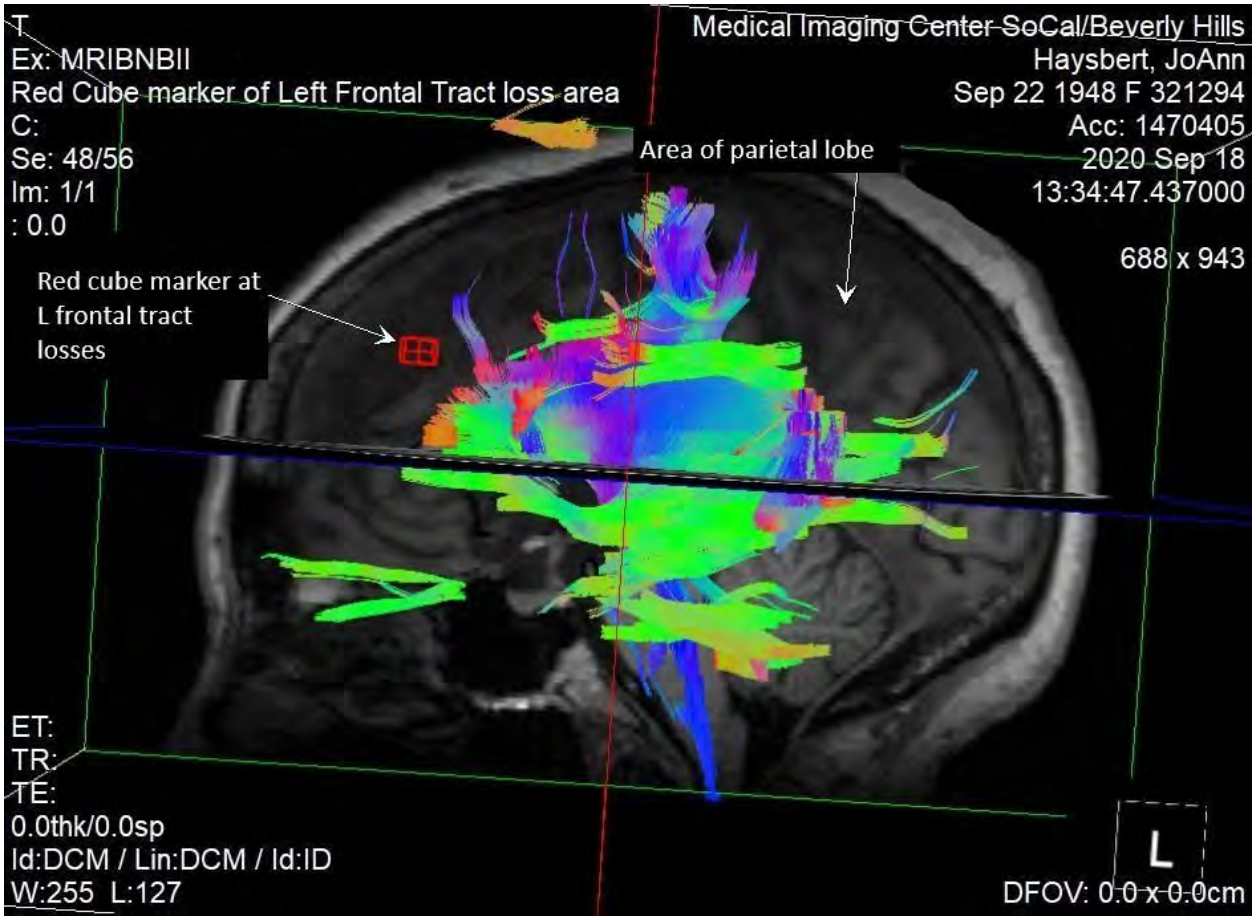

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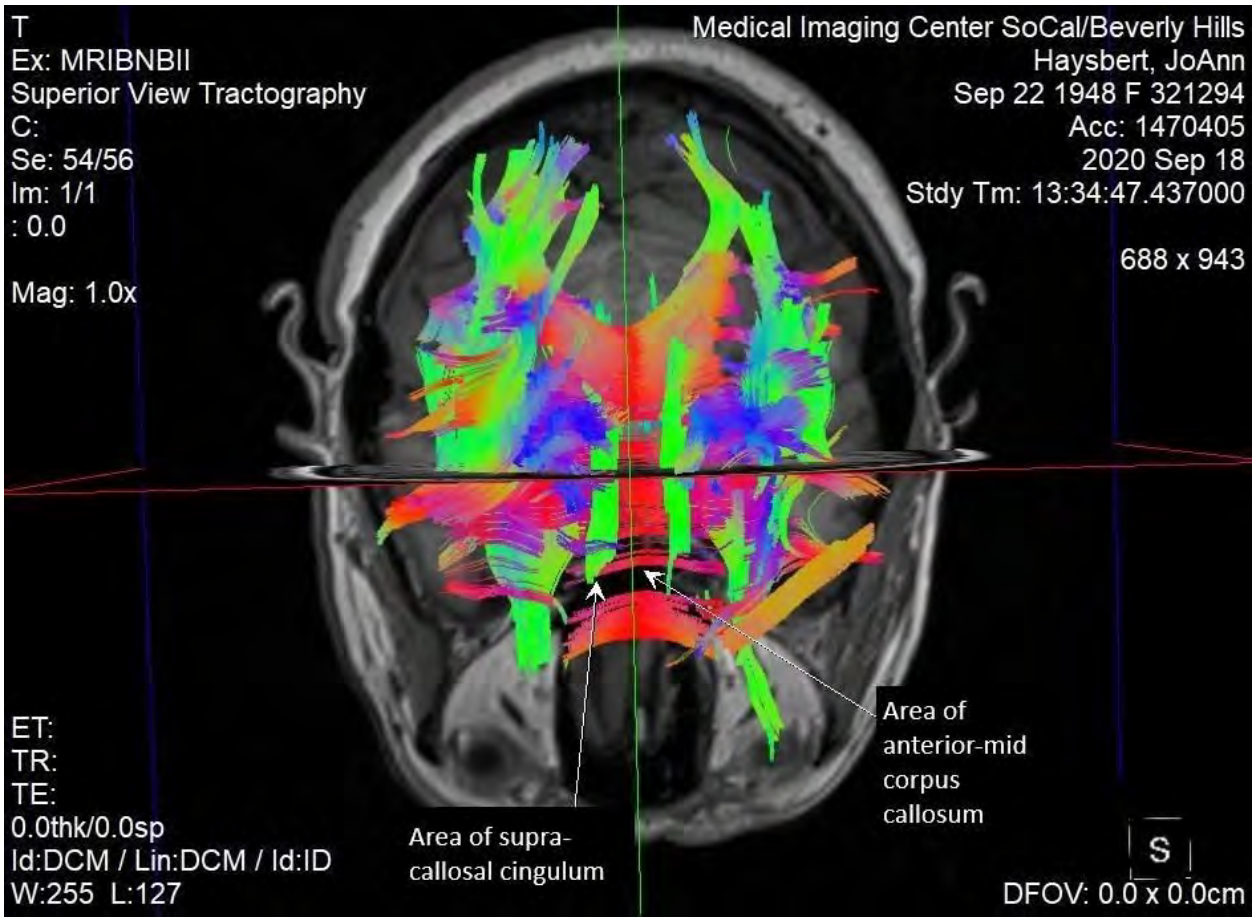

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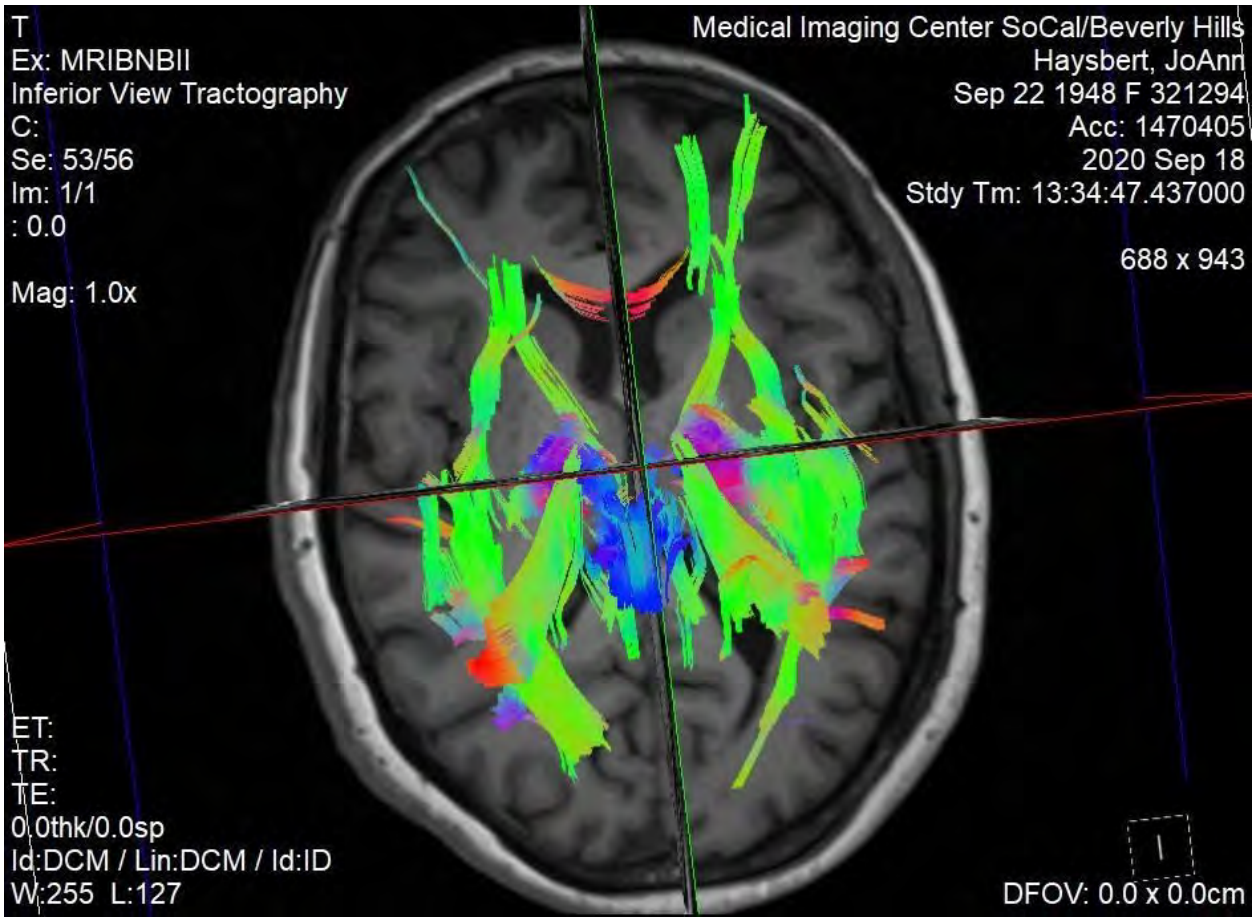

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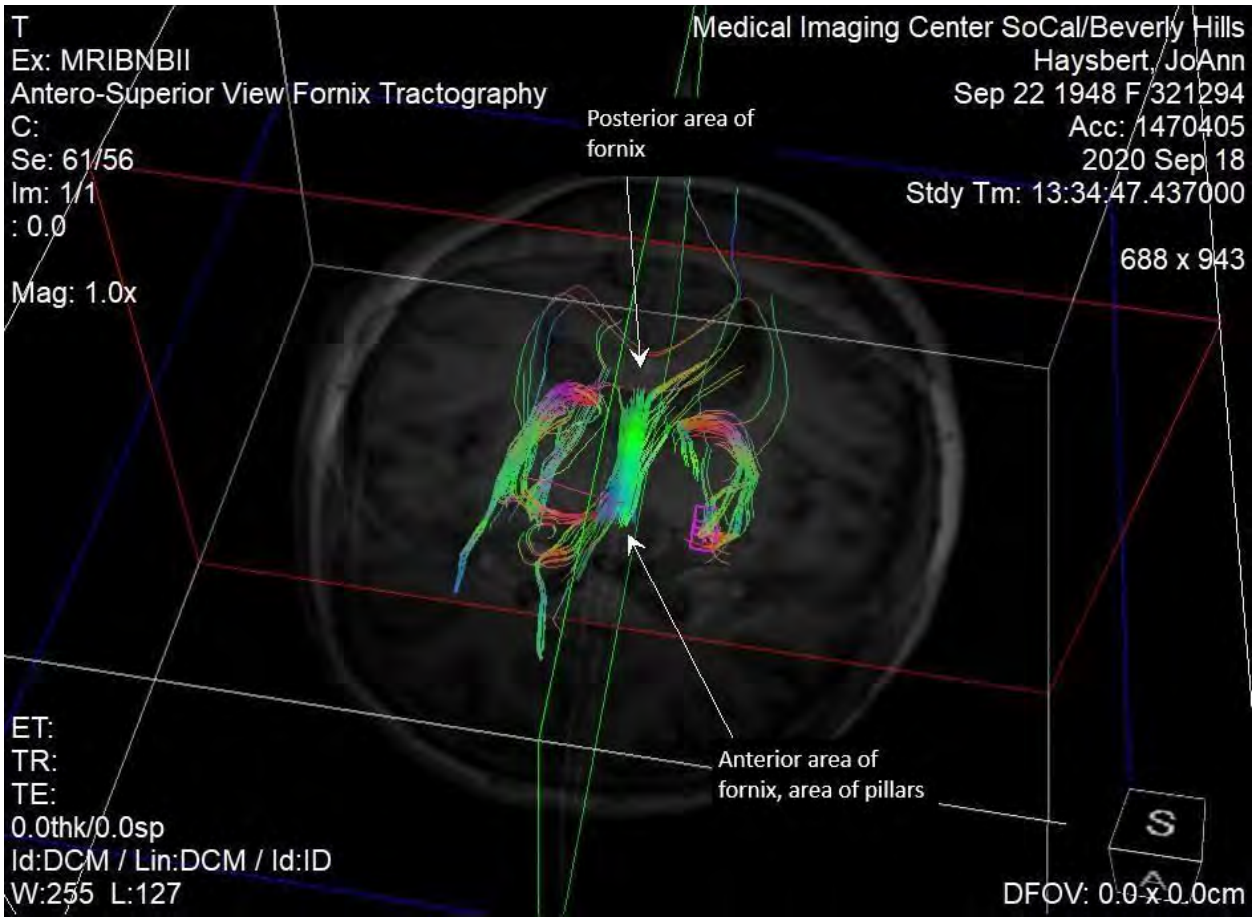

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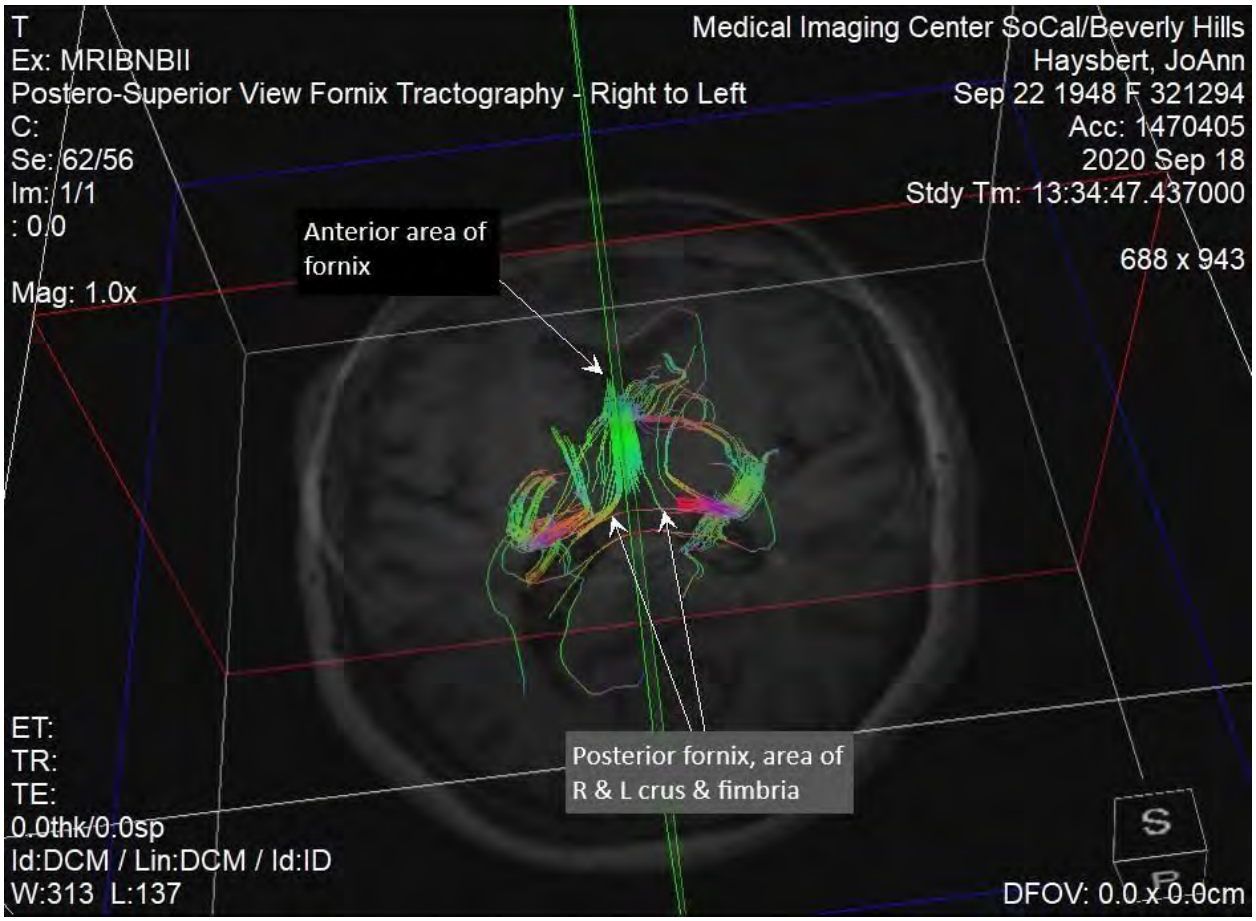

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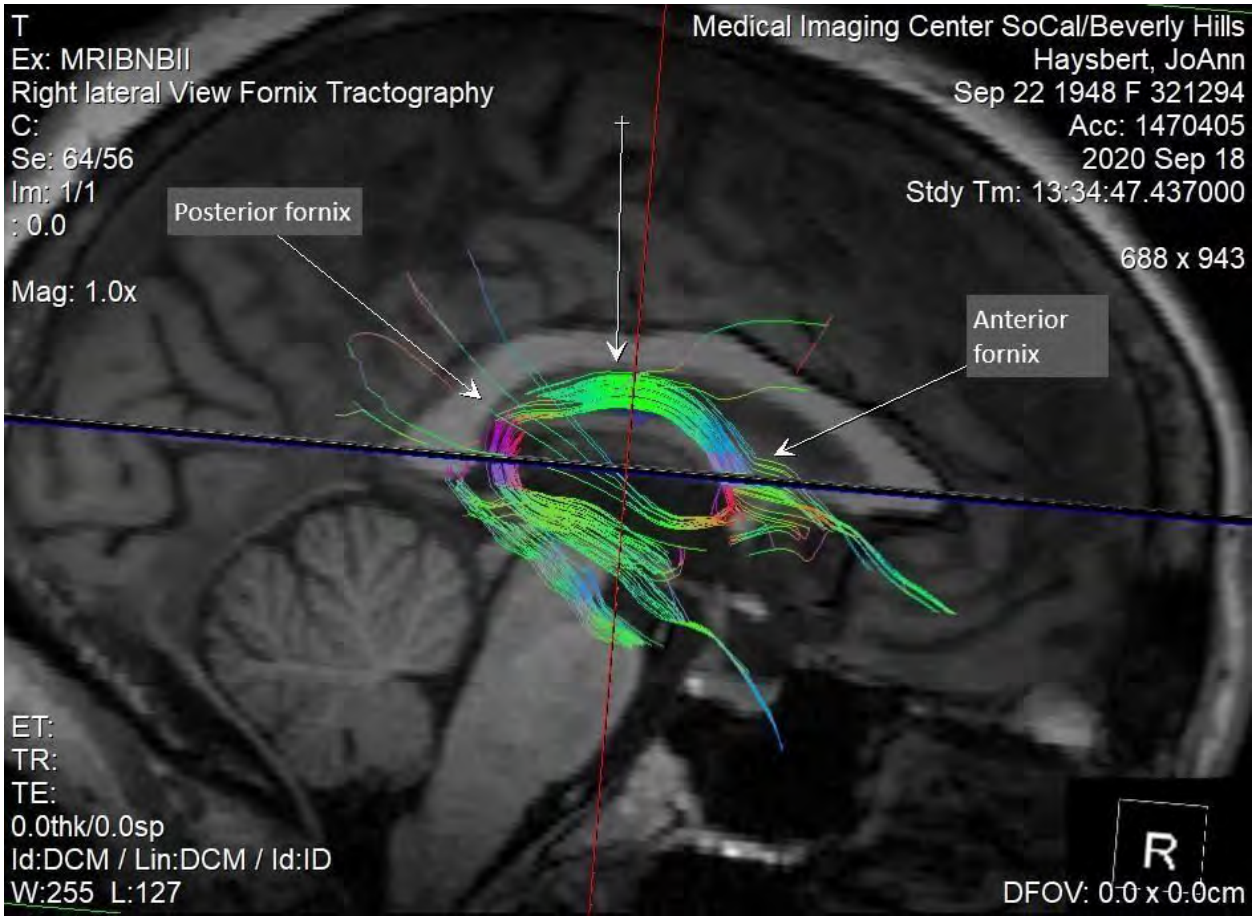

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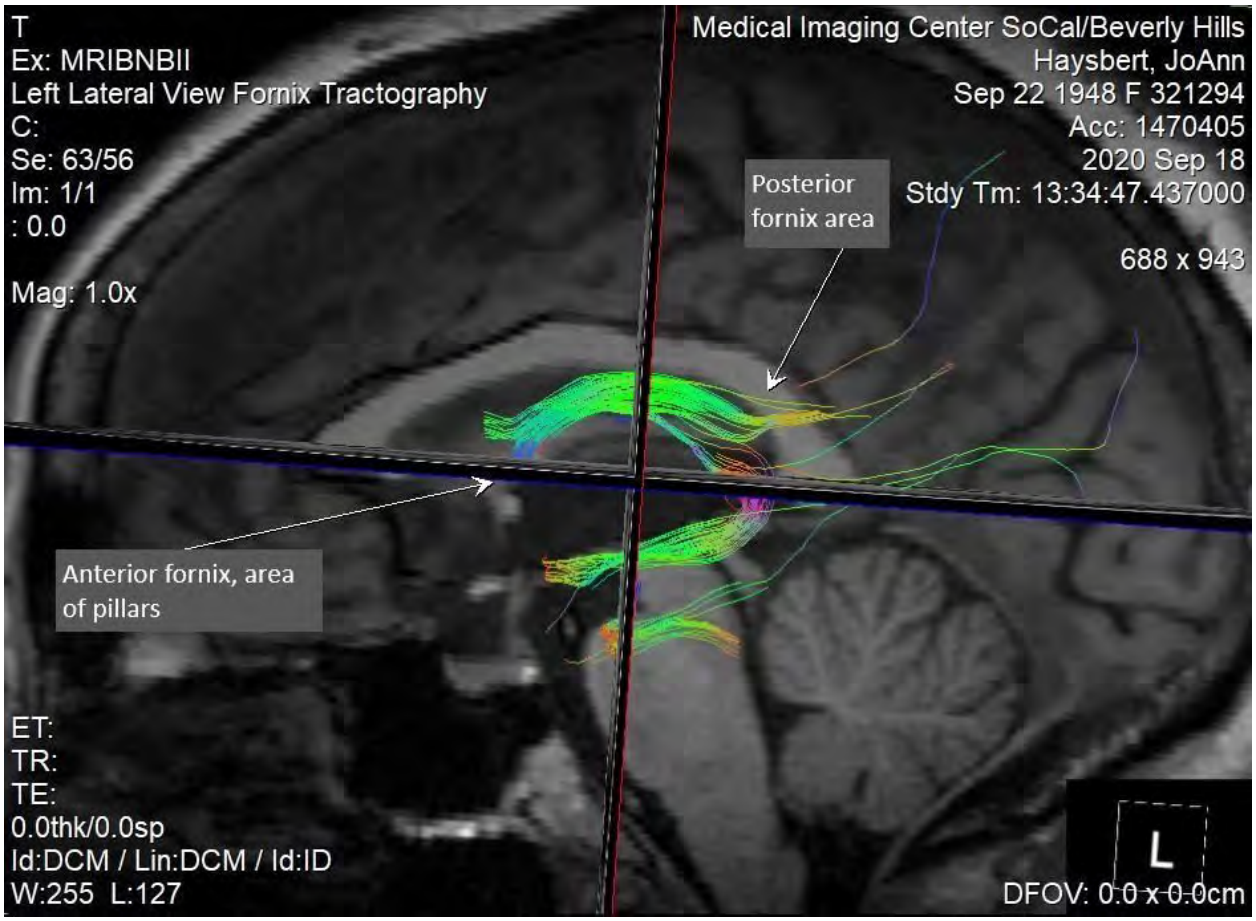

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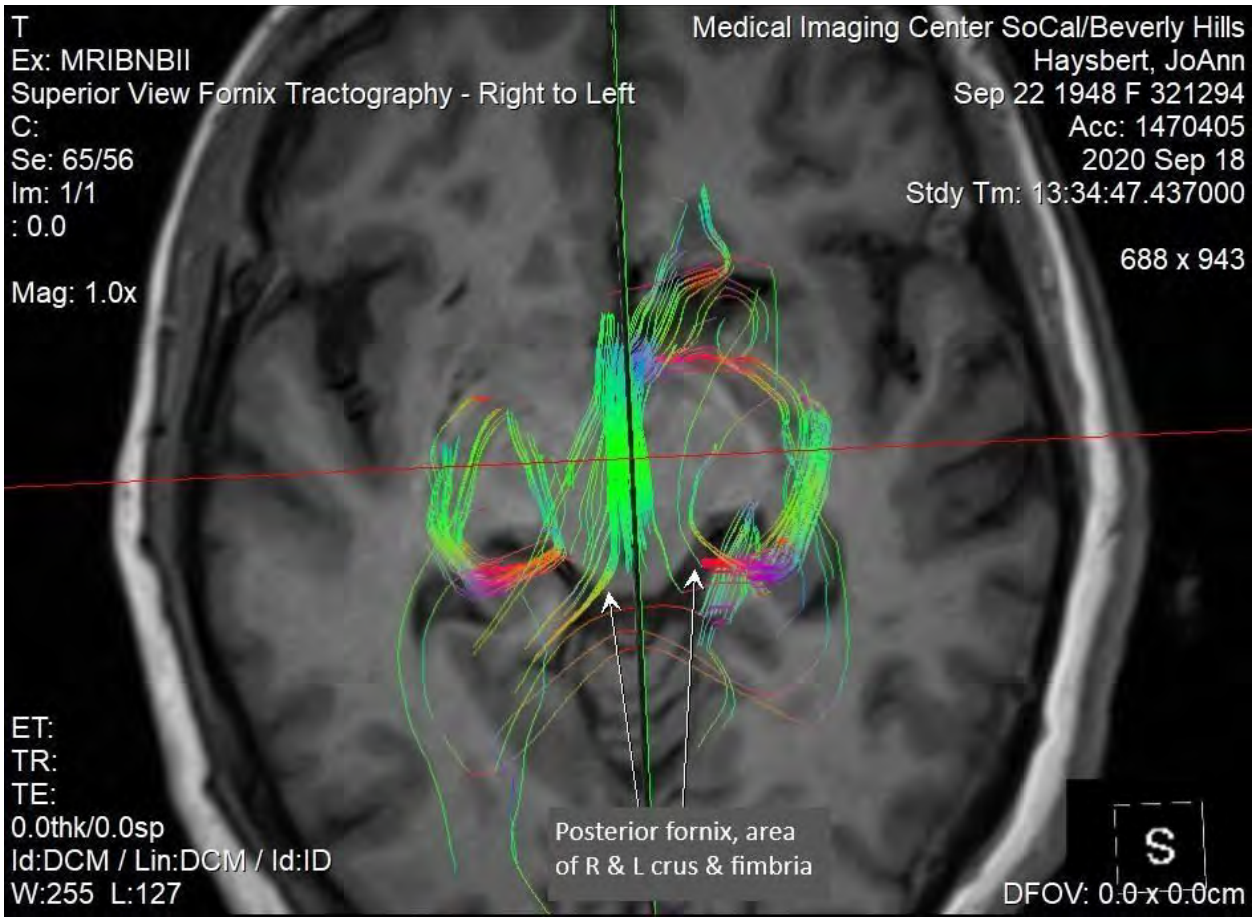

Routine Brain and SWI MRI FINDINGS: These images demonstrate the brain anatomy at 3-Tesla and using a number of image sequences and image planes. The brain images are obtained in coronal, axial, and sagittal planes and include the following the coronal T2 MP GRE HEMO and or SWI (SWAN) sequence for micro bleeds, sagittal T2 FLAIR, axial T2 FLAIR, axial T2, axial T1 MP RAGE, coronal T2 FLAIR FS, as well as a variety of analytical evaluations including susceptibility-weighted imaging (SWI) and maximum intensity projection SWI in the coronal plane. Susceptibility weighted imaging accentuates the effect of elemental iron deposited in a brain location by bleeding or "micro-hemorrhages" in the past.

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IMAGE FINDINGS: The routine brain imaging shows generally normal gyral-to-sulcal proportions for age and just some very slight generalized atrophy. The ventricles are generally normal in size, shape and position, with just some slight dilatation, particularly in the posterior occipital horn on the left side, which may reflect some tissue loss such as an atrophy process, perhaps possibly prior stroke or congenital right to left difference. The cerebellar tonsils are normal in position. The pineal region generally is normal. The FLAIR imaging demonstrates extensive FLAIR abnormalities which are expected for age. These are of unclear clinical significance. They are distributed bilaterally through posterior parietal lobe, occipital, and frontal lobes. These may reflect microvascular abnormalities, infectious abnormalities, they can reflect trauma. The general and diffuse distribution tends to suggest chronic, perhaps asymptomatic basis. The clinical significance is unclear. The susceptibility-weighted imaging does not demonstrate any clear areas of microhemorrhage. There is no mass effect or midline shift. There are no extra axial collections of fluid or blood. The sella and parasellar regions are normal. The posterior fossa is normal. The mastoid cells are clear. The sinuses and orbits are normal.

IMPRESSION and OVERALL IMPRESSION: Overall impression is generally normal routine brain imaging with some expansion of the left occipital horn of the lateral ventricle which may reflect some prior volume loss. Extensive FLAIR abnormalities of unclear clinical significance, not specifically related in location to the areas of fractional anisotropy losses. The fractional anisotropy analysis and the tractographic analysis both demonstrate problems in the frontal lobe associated with the white matter stem of the superior, middle and inferior frontal gyri with expected effects of impairment of multistep planning, map-based planning and emotional control release functions. Both demonstrate problems in the angular gyrus in the left parietal lobe which for this right-handed individual would be expected to have the effect of impairment of word finding and calculation ability. Losses appreciated both in both evaluations with regard to the arcuate fasciculus which can affect prosody or flow of speech as well as the other aspects of speech processing. There are losses in the fornix which would be expected to have the effect of impairment of new memory formation. The tractographic analysis additionally demonstrates problems bilaterally in the supra-callosal cingulum which would have the expected effects of increased anxiety and depression. The fractional anisotropy analysis additionally demonstrates some low numbers for the occipital lobe on the left which may reflect impairment of processing of visual information arising on the right side of the body. Some low numbers for the left uncinate fasciculus and inferior frontal occipital fasciculus, not quite statistically significant, but may reflect problems such as flattening of affect and loss of emotional drive and some types of visual recognition phenomena. There are low numbers in the left hippocampal cingulum and to a lesser extent in the right hippocampal cingulum which may reflect problems with attention, and some low numbers on the medial lemniscus, particularly on the left side, which may reflect impairments associated with the midbrain such as difficulties with pupillary accommodation, eye movement, convergence, and possible associated with symptoms such as photophobia. Overall, these findings demonstrate

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multiple abnormalities which would be expected to have effects on cognition, emotional behavior and neurologic functions as detailed above. The severity of the abnormalities appreciated in the imaging would be expected to have clinically significant symptoms. The locations and types of injury are consistent with the mechanics of the trauma as described.

Signed:

Aaron Filler, MD, PhD
Neurography Institute Medical Associates

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Fellow of the Royal College of
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Fellow of the Intercollegiate Board in
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CERTIFICATE OF SERVICE

JOANN WRIGHT HAYSBERT v. BLOOMIN' BRANDS, INC., et al., Case No.: 4:20-cv-00121-RBS-DEM

I hereby certify that on this 23rd day of June, 2021, a true and accurate copy of the foregoing was sent via email:

I served this document on the persons below:

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EXHIBIT B

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Newport News Division

JOANN WRIGHT HAYSBERT, Plaintiff, v. BLOOMIN' BRANDS, INC., AND OUTBACK STEAKHOUSE OF FLORIDA, LLC, Defendants.	CIVIL ACTION NO. 4:20cv121

EXCERPT OF PROCEEDINGS

(Testimony of Aaron Filler, Ph.D.)

DAY 3

Norfolk, Virginia

August 10, 2021

BEFORE: THE HONORABLE REBECCA BEACH SMITH, and a Jury
United States District Judge

APPEARANCES:

CRANDALL & KATT
By: David A. McKelvey
And
HAYSBERT & MOULTRIE LLP
By: Nazareth M. Haysbert
Counsel for the Plaintiff

Dr. Filler?

THE WITNESS: Right. So the line is 12, "Losses appreciated," the last two words in that line. It says, "Losses appreciated in the right crus of the fornix and the left pillar of the fornix on detailed formal tractographic evaluation of the fornix, and the limbic system reveal abnormalities which will have the expected effects of impairment of new memory formation. Overall, these findings demonstrate multiple abnormalities with expected effects on cognition, emotional behavior, and neurologic functions are as identified above."

So and, "The degree of injury appreciated would be expected to result in clinically significant symptoms. And the locations and types of injury are consistent with the mechanics of the trauma as described."

So in particular, though, with regard to the fornix injury, I say it will have the expected effects of impairment of the memory formation. And in -- the way I would write in different formats, that medically is as strong or stronger than saying reasonable degree of medical probability, not an extreme degree of medical probability or absolute, but that's my use of words.

MR. HAYSBERT: Certainty, not probability.

THE WITNESS: Yes.

THE COURT: So what is it? With a reasonable

degree of probability, with a reasonable degree of medical certainty?

THE WITNESS: Certainty. Expected effects.

BY MR. HAYSBERT:

Q. And you found those effects in Dr. Haysbert, correct?

A. Right. I'm saying these injuries, just like you see a femur fracture, expected effect would be pain and difficulty walking. Calcaneal fracture, same thing. But here you have, I'm saying with this image finding, and it's pretty striking when you see the image, the disruption, in my view, it would have the expected effect of impairing new memory formation, which, again, I agree that the weakness in it is only what if she they developed memory failure before, but it's a particular type of memory.

So people get global memory loss, like in Alzheimer's disease. This is not that. It's this new memory formation issue, which is not absolute; it is relative. It's part of the fornix is still intact, and so that is typical of trauma, particularly with much of the rest of the brain intact.

And as I testified earlier, I rely on the fact of the type of work she was doing before and that I don't think this would be compatible with her having reached her level of responsibility and a skill in her field with that impairment, and she complains of it affecting her ability to work

Q. Is it your opinion, to a reasonable degree of medical certainty that Dr. Haysbert suffered a traumatic brain injury in this case?
A. Yes.
Q. Is it also your opinion that Dr. Haysbert suffered this traumatic brain injury from a sudden impact consistent with the fall?
A. Yes. As I said, the type of fornix injury she has, if you look at the picture, you may form the same opinion, but you're not used to looking at these, is what I call, as I said before, pathognomonic, meaning this comes from a lateral impact trauma, and there is nothing else that will cause exactly that, why that spot.
Q. So it couldn't come from old age?
A. It did not come from old age.
Q. And it couldn't have come from some type of just gradual process over time?
A. No, because it's so focal, and the fornix looks great on either side of it.
Q. So it was like a shearing process, like something --
A. Abrupt lateral movement of the fornix in the ventricle so that it causes this traumatic bruising injury at the point where it's, fixated by the whole mass of the brain, so right at that transition point.
Q. You said you reviewed Dr. Haider's report, correct?

that has that image complains of problem with new memory formation.

MR. McGAVIN: Objection, Your Honor, foundation.

THE COURT: Go ahead.

BY MR. HAYSBERT:

Q. Going back to the fornix, you said on both sides it appears to be stable. Is that what you --

A. Yeah. Coming into that area of breach and going out of it, it seems okay, but right at the point of transition, it's got this breach in it there that we're pointing out with the arrow.

Q. Let me ask you specific questions about this breach that's pointing out at the arrow. Is this kind of breach something that someone would have because of old age?

A. No.

Q. Is this kind of breach someone would have because they have dizziness?

A. No.

Q. Vertigo?

A. No.

Q. Headaches?

A. No.

Q. This type of injury is a physical injury to the brain, correct?

A. Yes.

Q. So it's actually there; it's real?
A. Yes.
Q. Can you see it from the outside?
A. No.
Q. But it's real?
A. Yes.
Q. And what you're saying is, Doctor, that this kind of image can only happen if there is a sudden traumatic event, correct?
A. Yes.
Q. And could that sudden traumatic event be a fall?
A. Yes.

THE COURT: Could it be a car accident?

THE WITNESS: Yes.

THE COURT: Could it be a bicycle accident?

THE WITNESS: Yes.

THE COURT: So it could be any number of things. It could be any type of injury that could occur from a fall or a hit or something like that?

THE WITNESS: Yes.

BY MR. HAYSBERT:

Q. Do you recall when you completed these images and examined Dr. Haysbert's brain?
A. So this image is dated September 18, 2020.
Q. Okay.

that indication, I'm going to say, well, I think, as I say in there --

BY MR. HAYSBERT:

Q. Can we state to a reasonable degree of medical certainty --

THE COURT: Let him finish his answer, please.

MR. HAYSBERT: Sure.

THE WITNESS: -- that it would -- this would cause a typical concussive symptom, impairment of new memory formation, and would be consistent with the history given, "Patient with symptoms after a fall," how all imaging is done.

Patient comes to the emergency room, has a symptom. We order a test for that symptom. The imaging doctor says, oh, patient complaining of this, I did the test, here's my finding, yeah, we all agree this explains the symptom in the light of what happened.

BY MR. HAYSBERT:

Q. What we can also understand from this image is we can rule some things out, Doctor. You are a neurosurgeon, correct?

A. Yes.

Q. You can rule out vertigo from this image?

A. This doesn't show vertigo. It doesn't show a brain hemorrhage. There is no emergency surgery needed. I can

tell what's likely to happen, maybe what medicines might help, what treatments we now have, and also say it looks traumatic, that it doesn't look like someone is getting memory problems or diffuse brain problems from old age.

This looks like trauma, and if this started with that fall, and the indication for which this test was ordered, then it's my opinion that this indication that caused this concussive syndrome to get an MRI matches this image finding. And that's how doctors will do. That's how we do it.

Q. Do you make that opinion to a reasonable degree of medical certainty?

MR. McGAVIN: Objection, Your Honor.

BY MR. HAYSBERT:

Q. You can make that opinion to a reasonable degree of medical certainty. You're a doctor, right? I'm sorry?

THE COURT: Go ahead and ask it. I'll let you cross-examine on the report.

MR. HAYSBERT: Thank you.

BY MR. HAYSBERT:

Q. Do you make that opinion to a reasonable degree of medical certainty in this case?

A. Yes. In my experience and training, which I should rely on, is that with that history given to me by the doctor who ordered the test, this finding that, to a reasonable degree

of medical certainty, that fall caused the image or concussion, is the cause of this damage, and this will explain the concussive symptom.

Q. This is objective evidence of damage, correct?

A. Yes. It's an objective finding that links history to symptom and the image finding.

Q. And this type of evidence is something that may not ever be picked up on a CT scan or MRI scan, correct?

A. Right. And it is how doctors do. You don't send a patient down to the radiologist saying, I'm not going to tell you what's wrong with him, image the whole body and see what you find. We don't do that because it won't result in useful information.

Q. And you can tell by the exact physical injury that you see in that brain, that you cannot detect with the visible eye, you can tell that that exact physical impairment goes directly to memory loss, correct?

A. Yes. And just like putting on glasses might help me --

MR. McGAVIN: I object.

THE COURT: Mr. Haysbert --

MR. HAYSBERT: No further questions.

THE COURT: Mr. Haysbert, I'm going to put on the record your conduct. You just took a piece of paper and slammed it down hard on a table so that it crackled in the courtroom and then yelled "no further questions." That

and you can't discuss it with any other witness or any other parties until the case is over. I don't think you will be called back, but if you were needed further, we would let you know, and that would come through Mr. Haysbert.

I think you might be able to make it. What time is your plane?

THE WITNESS: Might just make it.

THE COURT: You might. Airport is not far. We are not L.A., so I wish you well, and thank you again for testifying.

THE WITNESS: Okay. Thank you, Your Honor.

(Witness excused.)

* * * * *

CERTIFICATION

I certify that the foregoing is a correct transcript from the record of proceedings in the above-entitled matter.

X_____/s/_____x

Jody A. Stewart

X_____8-12-2023 _____x

Date